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Automobile journal

vol.66 July 1919



20 Cents the Copy

\$1.50 the Year

AUTOMOBILE JOURNAL

DEVOTED TO
OWNERS OF NEW AND USED CARS DEALERS AND REPAIRERS

VOL. LXVI

PAWTUCKET, R. I., JULY, 1919.

NO. 12



Average Mileage Delivered Last Year—14,000 Miles

That's the record of the Hood Extra Ply Tire, size 30" x 3½". What other make of tire can point to such a performance with its resulting low cost per mile?

For the purpose of comparison, consider a so-called "standard" tire of the same size listing at \$20.85—recently adjusted on a basis of 3,500 miles—and which may deliver, let us say, 4,500 miles. Figured on a cost-per-mile basis, this ordinary tire shows an actual and final cost of \$4.63 for each 1000 miles run.

Figured on the same basis, a Hood—listing at \$31—shows a final cost of only \$2.21½ for each 1000 miles. The difference, which is \$2.41½, proves that in running 14,000 miles on Hoods the user saves \$33.81 for each Hood Tire.

Put on a Hood to-day
Forget it for a year



You can buy
HOOD TIRES
at this sign



And remember also that—one tube only is required during the life of a Hood, while the "low-mileage" make will require at least three tubes to cover an equal distance. At \$4 each, your extra tube expense is \$8.

\$33.81 plus \$8 is \$41.81—what you save in running 14,000 miles if your tire is a Hood. Can you afford to be without a Hood?

Ask the Hood Dealer for proof. And write to us for free booklet, "The Why of the Extra Ply."

HOOD TIRE CO., Inc.
WATERTOWN MASS.

Automobile
T.O.I.
Digitized by Google

ZENITH

CARBURETOR

WHY?



Because ZENITH Supremacy in Carburetor Simplicity, Power, Reliability and Economy is based upon certain proven facts.

SIMPLICITY—Only five moving parts—not one affecting the mixture control—the famous automatic compound nozzle system.

POWER—It takes power to obtain speed. You may not be a speed fiend—but you like to feel power in reserve. De Palma's Packard 905, "the fastest thing on wheels," on Feb. 12th-17th, traveled 1 mile at the rate of 144.7 miles per hour—10 miles at 144.3—20 miles at 134.7. His car was equipped with a stock ZENITH carburetor.

RELIABILITY—This was the FIRST CONSIDERATION in designing the U. S. Naval Trans-Atlantic Planes. The performance of ZENITH on all Liberty engines, made its selection a matter of course.

ECONOMY—The Trans-Atlantic Planes had to count every drop of fuel. Lives depended on their fuel supply not being wasted. This was the SECOND CONSIDERATION on which the Naval experts based their ZENITH choice—a fact to be considered by every motor car or truck user.

These remarkable achievements explain:—

WHY it takes four factories—three in Europe and one in America to supply the world-wide demand.

WHY it was selected for the majority of the fighting planes on the Allied Front.

WHY it was used on the effective French Renault tanks.

WHY it is used by a majority of European automobile manufacturers, including Delage, Peugeot, Gregoire, DeDion and many other well known makers.

WHY it is used by over one hundred manufacturers of passenger and commercial cars in the U. S. A.

WHY YOU should use ZENITH EQUIPMENT.

ZENITH CARBURETOR COMPANY
NEW YORK DETROIT CHICAGO



SAVOLD

TIRE REBUILDING SYSTEM

*Nation-wide Service
To Motor Car Owners*

Buy Only the Better Tires Now

If you have been tempted to buy cheap tires, Mr. Car Owner, because the first cost of the better tire is a little more, ***now is the time to stop.*** A cheap tire like a cheap shoe does not stand repairing and rebuilding. Buy ***only*** the Better Tires now because:

They give you the greatest known mileage, and ***in addition***, under the SAVOLD rebuilding system, they give you this original mileage again, and in some cases, a third time—***at half the cost of a new tire.***

The SAVOLD rebuilding system combines scientific production, volume, unlimited buying power and rigid control of workmanship.

The New York SAVOLD plant at 227 to 245 W. 61st Street is the most complete, scientifically equipped tire plant in this country. Plans are rapidly nearing completion for the operation of similar model plants in all important centers from Boston to San Francisco.

Send for SAVOLD Price List F

5 COLUMBUS CIRCLE

NEW YORK CITY

SAVOLD TIRE CORPORATION



A Smaller Fine Car is the logical sales proposition

Dealers who have seen and driven this new Allen have unqualifiedly pronounced it **the** smaller fine car.

The reason is this:—the new Allen is amply big for five passenger ease but it isn't large or lumbering.

Because it is skillfully designed, it rides easier in the rear seat than any car anywhere near its size, and it gets that result without lengthy wheel base.

It handles nicer and is more snappy in acceleration than any large car—is a better hill climber and, of course, more economical.

This new Allen is exactly the kind of car people want, which, reduced to business terms, means that it is a great dealer proposition.

There is territory still open, but going fast. Write at once, if interested.

The New Allen Touring Car

FIVE PASSENGER

\$1295 f. o. b. Columbus, Ohio

Allen

THE ALLEN MOTOR COMPANY, COLUMBUS, OHIO, U. S. A.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

*The Car
of
the Year*



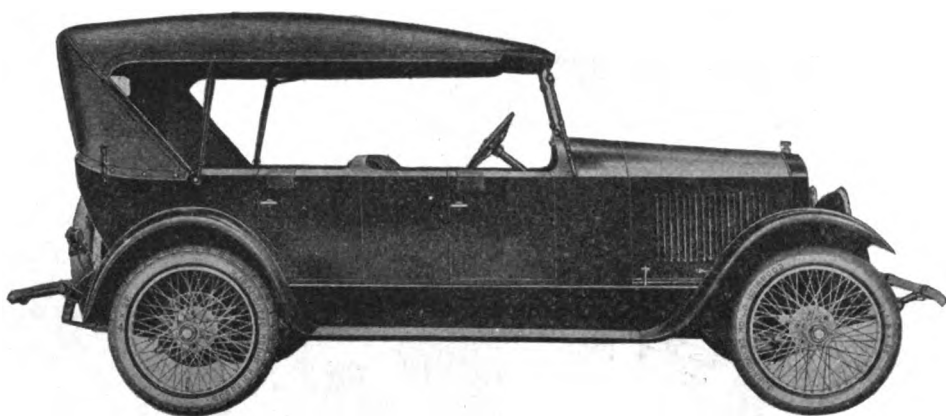
*A New England Product
Honest through and through*

**METZ SALES CORPORATION
BOSTON - MASS**

GEAR

DRIVE

(When Writing to Advertisers, Please Mention the Automobile Journal.)

METZ MASTER SIX*Elegance - Luxury*

Measured by any standard the METZ MASTER SIX is a car of distinction, — in design, in finish, in appointments, — a construction that admirably harmonizes.

No machine is more complete—no vehicle could be more carefully thought out and no car was ever perfected with greater regard for the requirements for every purpose.

Every quality has been considered. Every possibility has been appraised and the entire design has been developed to meet the demands of those who keenly discriminate.

There is elegance in the proportioning of the body, in the graceful, sweeping lines, in its simplicity and dignity.

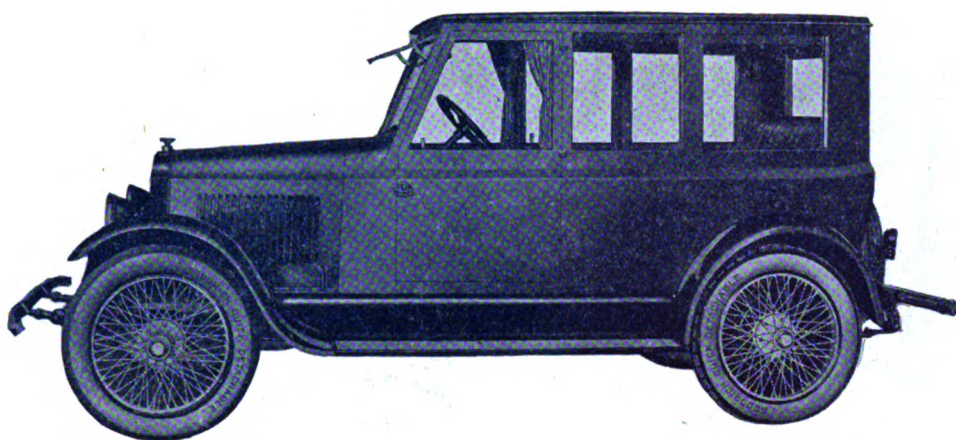
In every detail is evident the qualities that will make for motoring pleasure—for the driver who exacts flexibility and uniformity of acceleration on level ways and steep hills; who demands ease of control with wheel, pedal and lever; who wants perfect lubrication, small consumption of fuel, large tire mileage, and construction that means well nigh constant service with minimum of maintenance cost.

In the METZ MASTER SIX this means the fullest degree of comfort. That long, slow resiliency of the springs that absorbs all shocks and insures against fatigue; that depth of high grade leather upholstery that conforms to one's body and affords restful support; the ample space in which one can move unhampered and without cramping.

GEAR**DRIVE**

(When Writing to Advertisers, Please Mention the Automobile Journal.)

METZ MASTER SIX



Service - Endurance

The utility and satisfaction realized is in ratio to the design and the construction.

The METZ MASTER SIX is the conception and the creation of the Master—METZ—the choice of units with reference to materials, workmanship, appearance, accessibility and simplicity—the products of the best specialists of the industry, and combining them into a perfectly balanced assembly that will afford every quality that makes for undoubted superiority.

Service in the METZ MASTER SIX means that this car will measure up to every standard by which satisfaction is determined. Whether it be appearance, finish, convenience of appointments, comfort of passengers, ease of control, power, flexibility, safety, tire mileage, economy of maintenance, the car is equal to any machine built, and is unequalled when all of these qualities are considered as applied to a single design.

Endurance is meant to apply to period of utility, to the service life that can be expected. The METZ MASTER SIX is built for years of use. Every construction unit is known the world over for quality. No car was ever designed with greater factors of safety. Only with such units could a car of equal strength and light weight be realized.

There is in the METZ MASTER SIX greater value represented than any other car, because METZ owners enjoy all the superior qualities at far less expense. The best measure is a knowledge of other cars. Make every possible comparison. See them all without regard to price. Then you will learn that on the basis of quality the METZ MASTER SIX has been rightly named the PERFECT CAR.

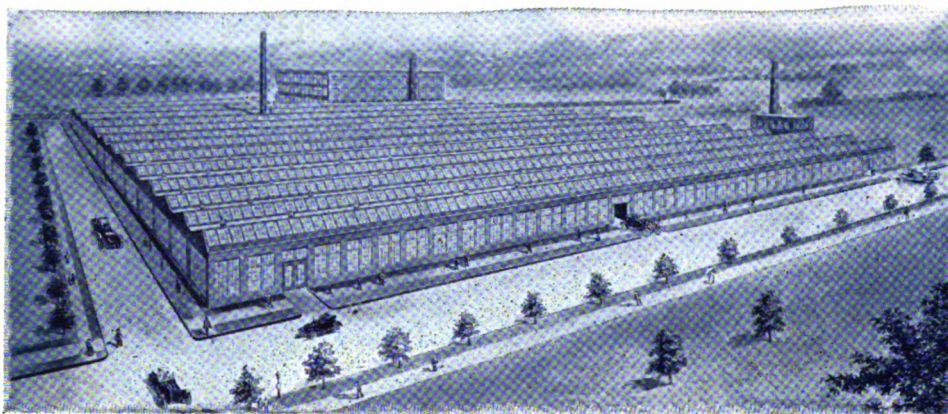
GEAR

DRIVE

(When Writing to Advertisers, Please Mention the Automobile Journal.)

METZ MASTER SIX

Metz Main Factory, Where the Metz Master Six Is Built



Specifications of Metz Master Six

MOTOR—MASTER SIX, $3\frac{1}{2} \times 5$, L head type six cylinder en bloc—unit power plant, with fully enclosed valves and detachable cylinder head. **FORCE FEED** and **Splash**. Positive pump circulation to all parts of motor. Pressure indicator on instrument board, gauge on crank case. **CARBURETOR**—STROMBERG Float Feed automatic type. Double jet, intake air heated, instrument board adjustment.

ELECTRIC EQUIPMENT—WESTINGHOUSE two unit lighting and starting systems.

IGNITION—CONNECTICUT distributor independent of generator.

BATTERY—WILLARD 6 volts, 120 hour ampere.

GASOLINE SYSTEM—15 gallon capacity tank carrier on rear. STEWART vacuum feed to carburetor, gasoline gauge.

STEERING GEAR—Worm and gear type, irreversible 18" special finger MASTER SIX walnut steering wheel, spark and throttle control levers and horn button mounted on top. Left side drive. **CONTROL**—Center gear shift lever and emergency brake hand lever.

TRANSMISSION—BROWN-LIPE, selective sliding gears; three speeds forward and reverse; nickel steel gears; special alloy steel shafts. Unit construction aluminum case.

CLUTCH—BORG & BECK single 10" dry disc type, positive—yet disengaged by a gentle push on clutch pedal.

DRIVE—Hotchkiss type; two universal joints and tubular propeller shaft.

LAMPS—Special MASTER SIX electric head and tail lamps with double bulb for dimming, dash and rear compartment lamps.

RADIATOR—Special MASTER SIX, Duplex cooler, copper tubes, cellular type, generous cooling surface, ample water capacity.

COOLING—Water, positive centrifugal pump circulation.

FRAME—Pressed steel channel section very wide in rear, tapering straight to front.

SPRINGS—Special alloy semi-elliptic; front 38" long, 2" wide, rear 54" long, 2" wide, underslung; suspended directly under frame.

AXLE—Front MASTER SIX, TIMKEN, single-piece drop-forging; I-beam section, heat treated TIMKEN bearings.

AXLE—Rear MASTER SIX, TIMKEN, $\frac{3}{4}$ floating type, pressed steel housing, spiral bevel driving gears, accessible from rear, TIMKEN bearings.

BRAKES—Service, $14\frac{1}{2}$ " external contracting on rear wheel; 2" wide with equalizer. Emergency internal expanding.

WHEELS—5 MASTER SIX wire wheels white enamelled—standard equipment for detachable straight side type tires. Artillery type optional. **TIRES**—32x4 GOODRICH, plain tread on front, and Non-Skid or Safety tread on rear. Six ply. **EXTRA WHEEL CARRIER**—Special design mounted on rear with safety lock.

LICENSE TAG HOLDERS—Front—special arrangement on lamp spacing rod. Rear—integral with lamp.

BUMPERS—Special MASTER SIX design front and rear.

BODY—Five passenger, pure stream line MASTER SIX Colonial design—custom made, sturdy and extremely comfortable, roomy and of pleasing appearance, deep wide cushions, flush type well fitted doors designed to eliminate all rattle. **WINDSHIELD**—MASTER SIX two-piece ventilating and rain vision.

FINISH—Highest grade custom coach work throughout. Royal blue with black enamelled guards and trimmings. White enamelled wire wheels, durable carpeted floor in rear, and special gray Linoleum covered floor in front, with running boards to match. Instrument board of dull finished walnut, with steering wheel special design to match and panel of walnut front of rear compartment.

UPHOLSTERING—Straight piped, fitted upholstery. Genuine deep buffed black leather cushions and back.

TOP—One-man, with curtains and top boot, curtains carried in pocket in top, using Dreadnaught water proof topping material.

SPEEDOMETER—STEWART, flush type, mounted on instrument board, driven through special gears at rear of transmission.

WARNING SIGNAL—Electric motor driven, operated from steering wheel.

EQUIPMENT—MASTER SIX one-man top with top cover and quick adjustable interior fastening side curtains; MASTER SIX rain vision, ventilating windshield; speedometer; motor driven horn; headlights with auxiliary bulbs; dash, rear compartment and tail lamps; ammeter; oil pressure indicator on dash; bumpers front and rear; extra wire wheel on rear, with special carrier and safety lock; special robe rail; pump; jack; tool kit in special pocket; tire repair outfit; ignition lock.

WHEELBASE—120 inches, tread 56 inches.

WEIGHT—2750 lbs. shipping weight; road weight with full tanks 2850 lbs.

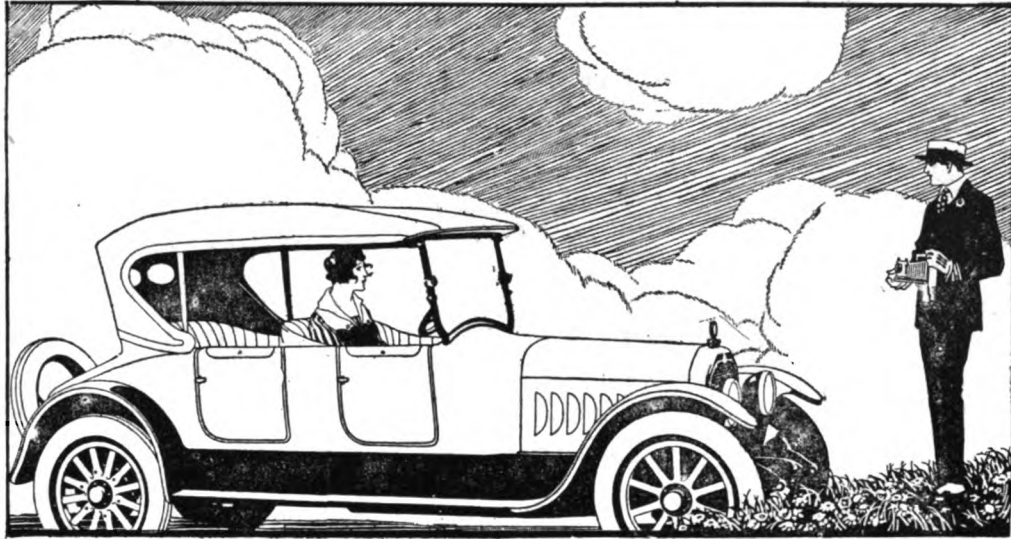
PRICE—Fully equipped, \$1695, F. O. B. factory.

METZ SALES CORPORATION

Metz Building Boston . . Mass

(When Writing to Advertisers, Please Mention the Automobile Journal.)

PEERLESS



The New Peerless Four-Door, Four-Seater. Very Smart, Very Comfortable

For the Peerless Two-Power Range, Eight Cylinder chassis this new roadster body has been created. It has four doors, and seating space for four passengers.

Its roominess permits a comfortable touring position for occupants of driving compartment and tonneau. It may be quickly and snugly enclosed with the side curtains.

There is a luggage compartment at the rear. Our allotment in cars of this type is limited but at present we can promise reasonably prompt delivery.

Do you know the thrill of driving the Two-Power Ranger? It is a thrill that can not be explained. To be understood it must have been experienced. May we not place a demonstrating car at your disposal.



The Peerless Motor Car Company
Cleveland, Ohio.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

DORT

Quality Goes Clear Through

TOURING CAR
\$925



The joy of the open highway, of swift, cool flight along winding mountain roads, is yours in a Dort.

Its simplified mechanism performs competently and smoothly in all sorts of going.

It pulls sturdily and powerfully in heavy traveling. It handles lightly and easily. It rides with a surprising comfort.

And above all, it gives a service that is uncommonly free of trouble. The simplicity of its design renders service-attention highly infrequent. And the accessibility of its construction enables you to adjust or tune up any part without expert assistance.

Prices F. O. B. Factory
Wire Wheels and Spare Tires Extra

(67)

Schmidt

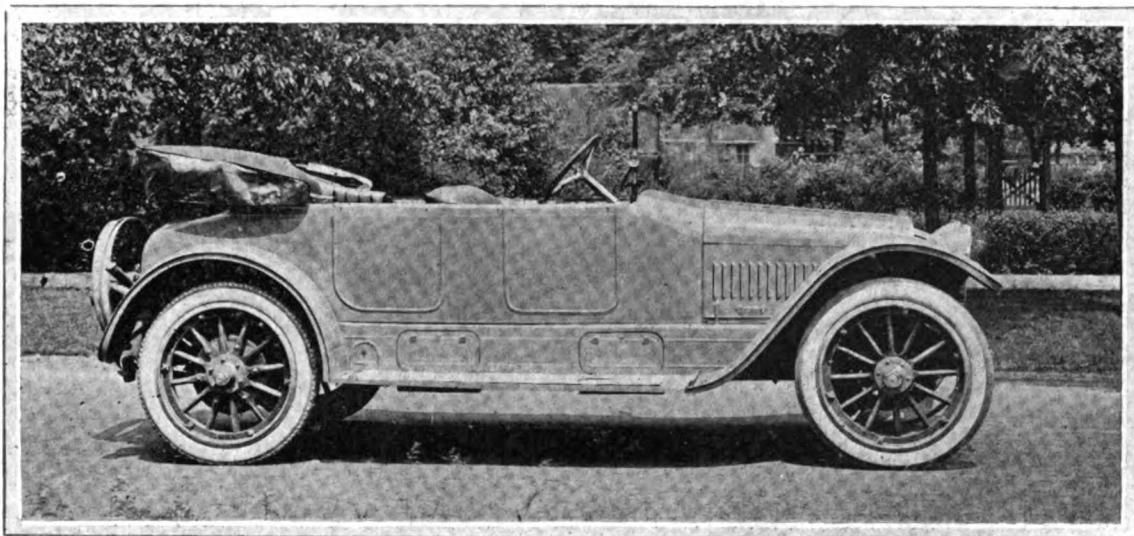
DORT MOTOR CAR COMPANY

Flint Mich.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

The Waltham Automobile Clock

More Than a Quarter Million Now in Use as Standard Equipment



*Winton 6-33 Four Passenger Roadster
Equipped with Waltham Automobile Clock*

It isn't enough that your automobile clock should keep good time under ordinary travel conditions. To be really valuable it must tell the right time all the time.

And a Waltham Automobile Clock can be relied upon to do this because it is scientifically constructed to withstand road shocks and changes of temperature.

It has a jeweled eight day movement, two mainsprings, and a winding indicator which flashes a red signal on the dial every seventh day.

The superiority of the Waltham Automobile Clock has led to its adoption as standard equipment by the makers of the fine cars listed on this page.

WALTHAM WATCH COMPANY
WALTHAM, MASS.



Waltham Model F

List of cars carrying Waltham Clocks as standard equipment

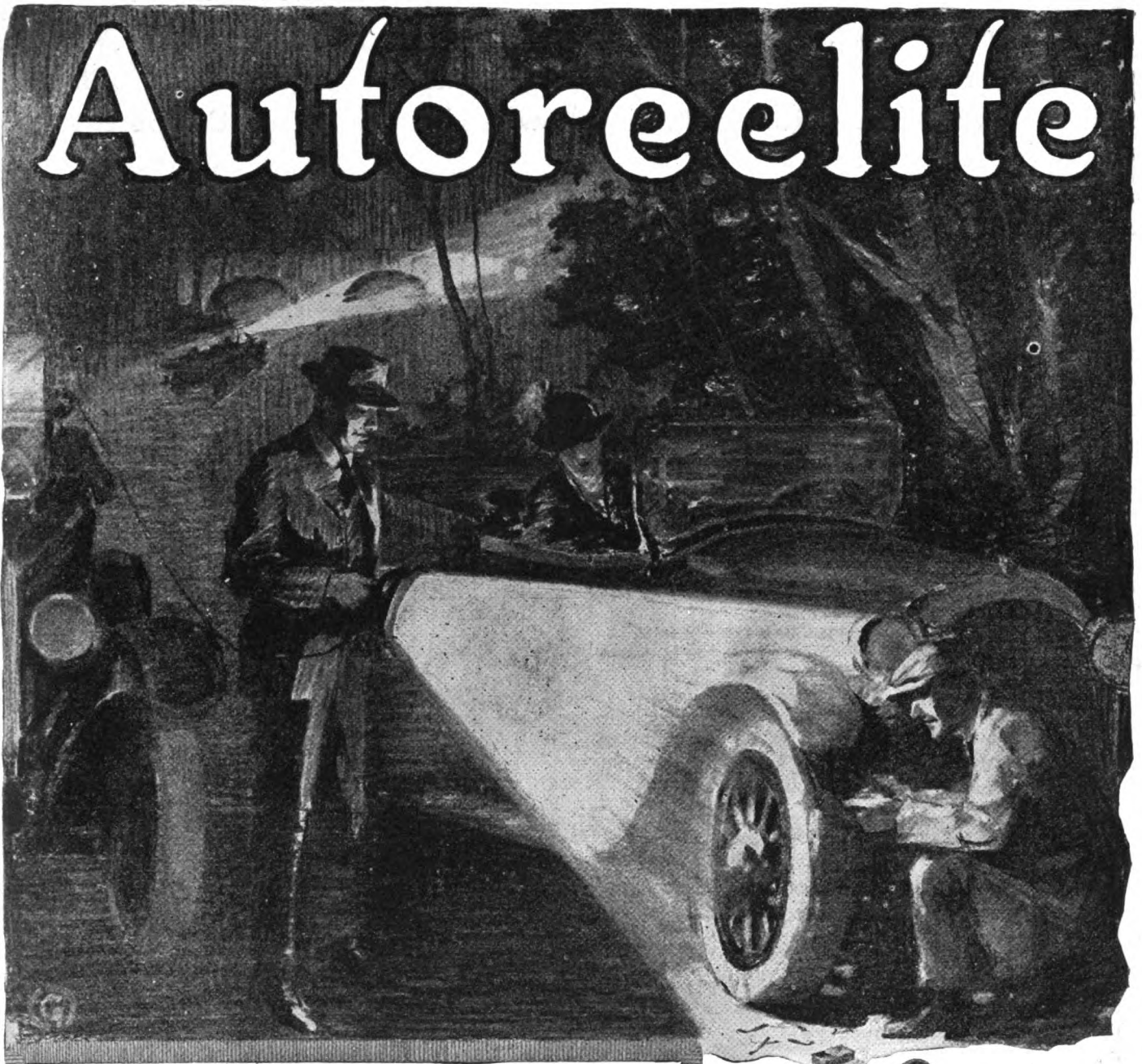
Anderson 6-40	Franklin	Mercer
Apperson	Haynes	Owen-Magnetic
Brewster	Hollier	Packard
Cadillac	Hudson Super-Six	Pierce-Arrow
Cole	Jordan	Rauch & Lang
Cunningham	Kiesel	Studebaker
Detroit-Electric	Locomobile	Willys-Overland
Dorris	Marmon	Winton

WALTHAM

THE WORLD'S WATCH OVER TIME

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Autoreelite



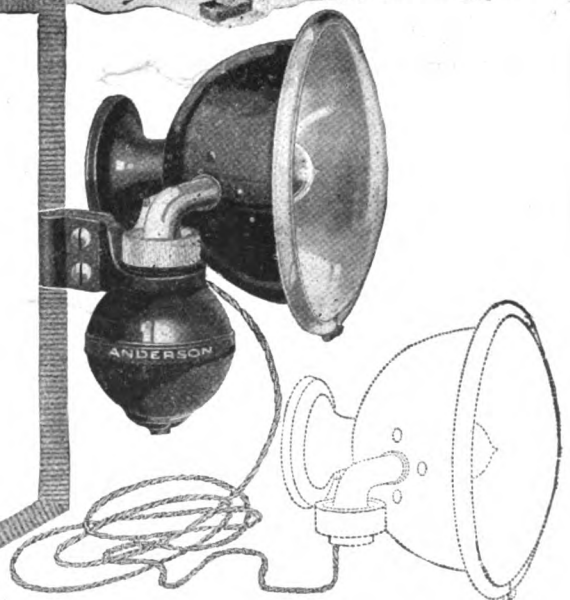
He's Lending His Spotlight!

He's a friend in need to the chap who relies on pocket flashlights or old-fashioned trouble-lamps with loose parts. His car is equipped with Autoreelite.

Autoreelite is a powerful, self-contained "spotlight on a reel." Two twists of the thumb and finger and Autoreelite can be reeled out any distance to 12 feet. Attached to windshield—fits any car.

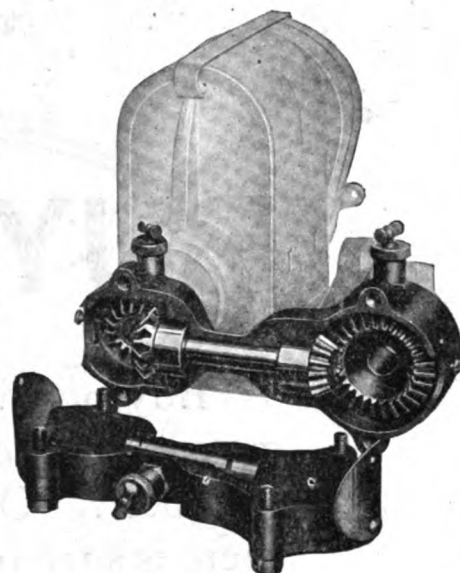
Priced no higher than ordinary spotlights—seven-inch size, \$10. Six-inch size, \$9. Other models. Write for full information—ask for Booklet J207.

ANDERSON ELECTRIC SPECIALTY CO.
118-124 South Clinton Street Chicago, Illinois



(When Writing to Advertisers, Please Mention the Automobile Journal.)

Every Car needs one



High Tension **MAGNETO ATTACHMENT** For Fords

More "pep," quicker starting, greater power and hill-climbing ability, speed and flexibility—wiring simplified to four short wires—economy of fuel—these are a few of the good things High Tension Magneto Ignition does for a Ford.

And it eliminates misfiring, overheating of engine and adjusting of vibrator, clears the dashboard of cumbersome coil-boxes and permits use of the Ford Generator for lighting and operation of the electrical accessories.



MAGNETO ATTACHMENT

Installing a Bosch, Eisemann, Splitdorf, Sims, Berling, or any other standard magneto on a Ford car is a simple matter with the HY-TEN. A novice can do it in 30 minutes, without special tools.

Simple in construction. Attachment complete includes magneto base, gear housing, gears, spark advance rod, with all bolts and screws needed for installing.

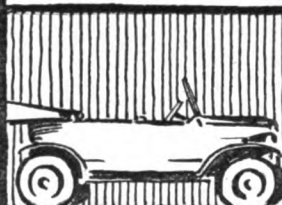
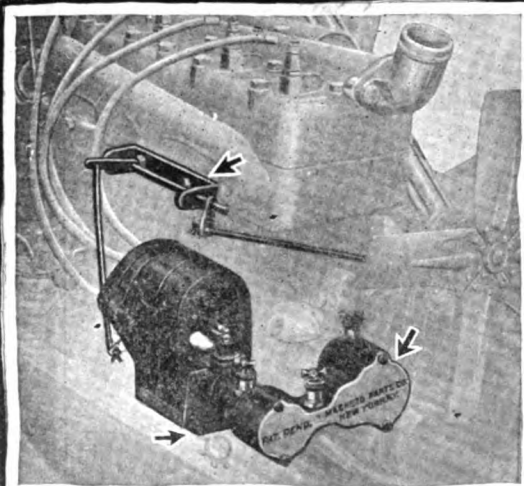
RETAIL PRICE \$25. Liberal Trade Discounts.

A Big Money-maker for Live Dealers. Write for Agency Proposition.

MAGNETO PARTS COMPANY

1784 Broadway

New York



(When Writing to Advertisers, Please Mention the Automobile Journal.)

BUYING OIL

Buying oil by the quart, as needed, may be the easiest way, but not always the best. Of the hundreds of brands there is sure to be some low grades. The safest method is to specify

Supreme Auto Oil

You get a good lubricant which leaves less carbon in the cylinders.

*There is MORE POWER in
THAT GOOD GULF GASOLINE*

Ask any dealer at the sign of the Orange Disc.

Gulf Refining Company

New York
Atlanta

Philadelphia
New Orleans

Boston
Houston

General Sales Office: Pittsburg, Pa.

You Can Eliminate Most of Your Tire and Tube Troubles.



SUPERFIX will save from 500% to 800% of your wasted time and money.



A tire or tube mended with SUPERFIX stays mended and any one can do the work. No heat, tools or acids needed and weather cannot affect it.

It is produced by tire makers, men who know all tire and tube problems.

SUPERFIX is not a cement or a patch. When used SUPERFIX becomes part of the rubber.

FOR TIRES

It is a rubber mend for glass cuts, rim cuts, holes and sand blisters. It will prevent blow outs and most other tire troubles.

FOR TUBES

SUPERFIX mended punctures can be immediately placed in casings and the tires wholly inflated. For long cuts and extremely bad repairs 6 to 12 hours is required. For valve pads it is unequalled.

SUPERFIX is a permanent and positive cure. There is nothing like it and it is just as practical for rubber boots, hot water bags, rubber gloves, hose, etc. Repairs that vulcanizers consider impossible can easily be done with SUPERFIX. SUPERFIX will splice a tube as effectually and permanently as it heals a puncture. It makes good tubes out of bad ones.

List price, \$1.00 per can. Discount on request

Order it—Sell it—Use it

Time required to use Superfix	Vulcanizing Cost	SUPERFIX Cost
Punctures...3 to 5 minutes	30 punctures @ 25c...\$7.50	30 punctures @ 1 1/2 c \$0.45
2 inch cut...7 minutes	5 blowouts @ 40c... 2.00	5 blowouts @ 7c... .35
12 inch cut...20 minutes	2 tire cuts @ \$1.00... 2.00	2 tire cuts @ 10c... .20
Tire cut...5 to 15 minutes	Total.....\$11.50	Total.....\$1.00

SUPERFIX Tire Paint.

In white, grey, red and black. This paint makes the tires look new and finds the small cuts and holes which prevents the water and sand from getting thru to the fabric and thereby gives greater wearing efficiency to the tire.

"SUPERFIX Casing Repair."

It is much like SUPERFIX, but is grey and gets harder and will wear with the tire.

JOBBERs and DEALERs: We offer the most dependable and attractive line made. Our terms and discounts make it a decided object for you to sell our products.

**The Superfix Rubber
Company**

Elyria

Ohio

The Superfix Rubber Company
Elyria, Ohio

Gentlemen: Enclosed please find one dollar for trial can of SUPERFIX. We understand that you guarantee this.

Name.....

Street.....

City.....State.....

(When Writing to Advertisers, Please Mention the Automobile Journal.)

TIRE MERCHANTS:—

Here is our June "Ad". More proof, isn't it, that I was right when I told you this tire has a real true sales story—a story that will sell tires?

Make this sales story work for you! Apply today for that Oldfield franchise!

You know me,

Barney Oldfield

It Took 20 Years To Build This Tire

The Oldfield Tire is more than just another new tire. It is not a new tire at all.

It is a development—a development of nearly 20 years of study and test, by the greatest tire user in the world.

Barney Oldfield had to have tires he could trust—tires that would stand the terrific strain and grind of the race track and transcontinental trail.

So he developed Oldfield Tires—improved them, year by year, till they showed themselves fully worthy of the trust he placed in them.

Now The Oldfield Tire Company brings to you the benefits of this unique tire research and experience.

A tire that has answered Barney Oldfield's requirements will answer yours.

A tire Barney Oldfield trusts is worthy of your fullest confidence.

Your experience with Oldfield Tires will bear out everything the "Master Driver" says when he pronounces them "The Most Trustworthy Tires Built."

Ride on Oldfields. You will learn to trust them as Barney Oldfield does.

THE OLDFIELD TIRE CO.

BARNEY OLDFIELD
PRESIDENT
CLEVELAND, O.



OLDFIELD TIRES

"The Most Trustworthy Tires Built"

(When Writing to Advertisers, Please Mention the Automobile Journal.)



Powrlok Drives the Wheel That Has Traction

An ordinary differential spins the wheel that *has lost traction*, letting the power leak into every mud hole, or snow bank, by refusing power to the wheel that is still gripping the road.

That is why trucks and passenger cars get stalled and skid.

POWRLOK works just the opposite. When one wheel loses its grip, POWRLOK automatically swings all the power over to the wheel that has traction and the truck or car pulls through.

POWRLOK eliminates 50% of the danger of skidding. It saves tires by preventing slippage.

POWRLOK is used by Torbensen, Timken and Clark, the leading manufacturers in the world of rear axles. It is used on the Nash Quads in Overseas Service. It is on the Militor Truck, the standardized four-wheel truck designed by the Government just before the Armistice. It is in service on the leading industrial trucks.

It is being adopted by the entire Automobile Industry as fast as engineers can be given demonstrations.

Write for complete data and specifications.

THE POWRLOK COMPANY

Successor to M. & S. Corporation

1107 East 152nd Street, Cleveland, Ohio



"MORE THAN A DIFFERENTIAL"

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Hartford Wins Again at Indianapolis

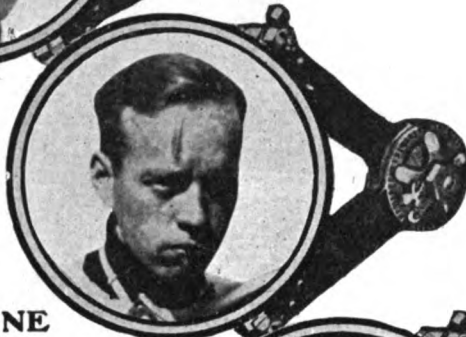
First

HOWARD WILCOX



Second

EDDIE HEARNE



Third

JULES GOUX



equipped with Hartford Shock Absorbers.

It is significant in this year's Classic at Indianapolis Wilcox, Hearne and Goux used Hartford Shock Absorbers.

Yet this merely sustains the winning tradition of Hartfords. In every important event for years past the speed kings have invariably equipped their cars with Hartfords.

The reason behind their selection of

the Hartford teaches a valuable lesson to every car owner, dealer and manufacturer in the country.

In these gruelling tests of speed stamina and driving the speed of the car magnifies the smallest bump or road shock a thousand times so that what would be a slight jar at 25 or 30 miles an hour becomes a sledge hammer blow at 75 to 149 miles.

Think what this means on a car like Wilcox's Peugeot which attained the speed of 92.7 miles per hour.

What Hartfords do for the racers at record-breaking speed they will do for any car at any speed and every speed. For the racers simply crowd into MINUTES the wear and tear the car would ordinarily get in years. And the protection to tires, mechanism and person—so essential to their safety, is just as vitally essential to the average car owner's pleasure and profit from his car.

EDWARD V. HARTFORD, Inc., Jersey City, N. J.
BOSTON BRANCH 319-325 COLUMBUS AVE.

Hartford


SHOCK ABSORBER

Ralph De Palma's record breaking Packard which attained a speed of 149 miles per hour at Ormond Beach was, of course, Hartford equipped.



(When Writing to Advertisers, Please Mention the Automobile Journal.)

11 Spark Plug Facts



- | | |
|----------------|-----------------|
| 1- Corporation | 6- Assembly |
| 2- Policy | 7- Quality |
| 3- Engineering | 8- Sizes |
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A presentation by

The **Red Head**
Spark Plug Corporation
 261 Broadway New York City



(When Writing to Advertisers, Please Mention the Automobile Journal.)

SPARK *Red Head* PLUGSRed  Head

TRADE MARK REG.

U. S. PAT. OFF.

Spark Plug Corporation

Big Boy
 $\frac{7}{8}$ "-18 (S. A. E.)
 also
 $\frac{1}{2}$ " and Metric

Was organized because we have absolute faith in the judgment of the people and in quality.

We understand that nothing succeeds that does not have quality and the measure of success is the ratio obtained by comparison—not with one—but with all competitors.

As a matter of business precaution we turned to the users and learned first hand the experience of owners of cars, trucks, tractors, power yachts and stationary engines with Red Head Vitristone Spark Plugs.

We had the conclusions of those who spoke from knowledge of service of different types and makes of spark plugs and were free to make their criticism—who had nothing to gain or lose and no purpose to serve by the expression of their opinions.

It was the statements of those who paid for their experience, and who of all others should know, that influenced us to acquire the patents and all the manufacturing rights covering Red Head Vitristone Spark Plugs.

Our object was first of all to control and then develop what we believe has extremely large possibilities. The best evidence of our confidence is our investment and the organization of the Red Head Spark Plug Corporation.

(Continued)

Red Head Spark Plug Corp.
 261 Broadway,
 New York.

SPARK *Red Head* PLUGS

Red Head Spark Plug Corp. Policy

The policy of the Red Head Spark Plug Corporation was determined after careful consideration of first, the business, and second, the engineering possibilities, for development.

Our object is to sell spark plugs, more spark plugs, and still more spark plugs, but as spark plugs must endure to satisfy the user, this means convincing buyers and developing the potential market through the knowledge of

Spark Plug Quality

We knew that the users of Red Head Spark Plugs believed in the quality of the plugs.

We knew that motorists cared nothing about who manufactured or sold the plugs, but they were vitally concerned in knowing that the plugs they buy would at least equal what they have bought, and be, if possible, still better quality.

The future depended entirely upon production, and primarily, upon engineering and design.

We also knew that the future depended upon satisfaction given users and the measure of service given by the plugs depended absolutely upon quality of materials, engineering and design, and with these facts in view we proceeded to investigate further.



Standard $\frac{3}{8}$ "-18
also
 $\frac{1}{2}$ " and Metric

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.

SPARK *Red Head* PLUGS

Red Head Spark Plug Engineering

TRADE MARK REG. U. S. PAT. OFF.



Standard $\frac{1}{2}$ " Long
Body for Ford.

Spark Plug Engineering—the phase may have the sound, to many, of a play upon words. But there is as great need for engineering in spark plug design and construction as there is in designing and constructing a magneto, a battery—in fact, any unit that must be dependable and which is used hard and habitually neglected.

A spark plug may be constructed of extremely cheap material that will serve. For a short time it may be reasonably serviceable, but frequent renewals rapidly increase the aggregate cost and there is besides the incidental loss of time, vehicle service, labor, trouble, annoyance, and, worst of all, uncertainty of use, all of which are obviated by the higher priced but dependable spark plug.

A spark plug is seemingly such a simple device that production is often regarded as a mere matter of assembling parts that can be produced at trifling cost and without regard to accuracy of combination or exactness of relation.

But there are many potent factors—the use that is made of a spark plug, the high and greatly varying temperatures, the variance of high expansive force, the differing expansion of parts, the resistance to gas leakage, the electrical conductivity, the quality of insulation, the type of gaskets, the exactness of relation of parts, the accuracy of workmanship and inspection and testing.

These were some of the factors considered and investigated, and the results opened the channels for possibilities for better construction and further improvement on the many good qualities so well known of Red Head Vitrystone Spark Plugs.

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.

SPARK *Red Head* PLUGSRed  Head

TRADE MARK REG.

U.S. PAT. OFF.

Spark Plug Improvement



Big Boy
 $\frac{1}{2}$ "- $\frac{1}{2}$ " Ext.
(Reo, Chalmers, etc.)

The best engineering talent obtainable was engaged and directed to Red Head Spark Plug development. We had the patents that insure to us the exclusive use of Vitrstone insulators, but we wanted something more than this—we wanted to so produce Red Head Spark Plugs that there would not only be better quality, but uniformity of quality, that there would be certainty of satisfaction with all plugs made.

The Vitrstone insulator is the best insulator or core made—we were certain of this, but we determined to improve this, if possible.

The combinations of materials were studied and experimented, tests being made to determine the qualities of each for spark plug insulation with reference to heat, oil and electrical resistance, to temperature variations, to endurance of vibratory and impact stresses, and for variability of production from various causes.

Then followed careful study of the processes of manufacture and study of plant equipment with reference to determining workmanship and the possibilities for improvement so there would be insurance of quality of all insulators, minimizing loss from defects and perfecting the output of the factory.

This led to determinations of economies obtainable through increased production and the possibilities were such as to justify the establishment of a new plant at Newtown, Pa., where the crude materials and the special fuel could be assembled to best manufacturing advantage.

This new plant was built and equipped and it is now in production, its facilities being so installed that expansion of output to meet any demand is practically possible. No expense has been spared to make this plant highly efficient in equipment and organization and to produce better Vitrstone insulators than were ever before made.

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

SPARK *Red Head* PLUGS

Red Head Spark Plug Manufacture

TRADE MARK REG. U.S. PAT. OFF.



Standard
7/8"-18 1/2" Ext. for Buick

Production of the Vitristone insulators was but one of the details of Red Head Spark Plug manufacture to be studied. No processes were regarded as perfect and endeavor was made to improve these.

The experimental work was begun with the raw materials and these were followed through each stage with the object of perfecting whatever might promise practical results.

The Vitristone insulators are tested and inspected at the plant before shipping. They are tested and inspected again at the New York factory. The bushings and shells are automatic screw machine products, and the settings of these machines are gauged systematically and the bushings and shells inspected individually so that no defect shall be found in further inspection that can humanly be detected.

The electrodes are inspected for length and thread (analysis determines the content of the nickel manganese steel wire upon receipt of each shipment) and the electrically welded electrodes of the "Big Boy" types are examined to detect possible flaws in welding because conductivity is imperative.

The insulators and electrodes are assembled and the insulator bores filled with a special compound under heavy pressure that is baked at 900 degrees Fahrenheit for 24 hours, the compound becoming practically a part of the insulator and positively sealing the bore against leakage.

Again the insulators are tested for electrical conductivity and with heavy pressure to determine whether they will resist the expansive forces of the cylinder explosions. The insulators must have perfect resistance to 25,000 volts and the finished plugs are tested for leakage with 150 pounds air pressure before being passed as ready for distribution.

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.

SPARK *Red Head* PLUGSRed  Head
TRADE MARK REG. U.S. PAT. OFF.*Spark Plug Assembly*

Red Head Vitristone Spark Plug shell electrodes are cut and formed from nickel manganese steel wire at one operation, and are shaped to resemble fish hooks, so that lubricant thrown upon them may drain to the lowest point, where it will drop off, thus preventing possibility of oil drops closing the circuit and stopping sparking.

Each of these shell electrodes is inspected first when made and second when placed in the bore drilled in the shell. Three of these electrodes are fitted in each shell of the "Big Boy" Plugs for high compression engines, this being a further insurance of service.

In assembling the spark plugs the electrodes are clamped into the bores by heavy pressure presses, so there is perfect metallic contact and certain conductivity.

Red Heads are made gas and pressure tight by our own copper-asbestos gaskets, one seating against the shell and one against the bushing, and the bushing is seated by hand pressure with a special wrench, for only by "feel" can the expert operator determine when a seat that will insure against leakage and not crush or destroy the elasticity of the gaskets is reached.

Then the electrodes are adjusted for the "gap" by hand and again is the plug tested for conductivity and for pressure resistance, and it is given a final inspection to be certain that the work is up to shop standard and that the plug will go to the shipping room with the certainty of maintenance of Red Head quality and service.

This statement is intended to show to spark plug users the care given to insure quality and to incidentally lessen production losses, because high efficiency means better work and a greater degree of satisfaction to all Red Head Vitristone Spark Plug users.

Standard $\frac{1}{2}$ "- $\frac{1}{2}$ " Ext. for

(Continued)

New York.
261 Broadway,
Red Head Spark Plug Corp.

SPARK *Red Head* PLUGS*Red Head*

TRADE MARK REG.

U. S. PAT. OFF.

Spark Plug Quality

Big Boy
 $\frac{7}{8}$ "-18 (S. A. E.)
 With Special
 Willys-Knight
 Terminal.

Quality in engineering, in design, in construction, in materials and in workmanship has been sought in the production of Red Head Vitristone Spark Plugs.

Degree of quality is established by what is definitely KNOWN of a product. As a manufacturer we have not hesitated to do whatever will in the judgment of experts improve the plugs, basing judgment of improvement on carefully determined standards that have been adopted with exact knowledge of results to be obtained.

Quality is the measure by which judgment is made and it is the measure that is best understood. In the final analysis it is "what you get for what you pay," whether the price be large or trifling.

But our knowledge of quality is not only based on engineering and production, it is far better established by the service result realized by users, which justifies the claim that Red Head products are the

Best of All Spark Plugs

This service is not what we claim it will be, but what the users know it is; what they have learned by experience in all types of engines and in every condition conceivable; in every form of power vehicle, in yachts, in tractors, in motorcycles, in airplanes and in stationary plants.

Neither is it based on short periods, but upon long service, extending in many instances over years and without exception upon comparisons impartially made with all other makes irrespective of type or price.

(Continued)

Red Head Spark Plug Corp.
 261 Broadway,
 New York.

SPARK *Red Head* PLUGSRed  Head

TRADE MARK REG.

U.S. PAT. OFF.

Spark Plug Sizes

Red Head Spark Plugs are made in several types and sizes to meet any particular requirement. All of the probable variables of engine construction have been provided for.

The Standard series includes $\frac{1}{2}$ " Regular, $\frac{1}{2}$ " Long Body for Ford cars, $\frac{7}{8}$ "-18, and Metric.

The Extension series includes $\frac{1}{2}$ " for Overland and Reo cars, having $\frac{1}{2}$ " Extension; the $\frac{1}{2}$ " for Metz cars, having $1\frac{1}{4}$ " extension and the $\frac{7}{8}$ "-18 for Buick and Chalmers cars, having $\frac{1}{2}$ " extension.

The Big Boy series, to take care of extremes of heat, compression and vibration, consists of $\frac{1}{2}$ ", Metric and $\frac{7}{8}$ "-18, as well as $\frac{1}{2}$ "- $\frac{1}{2}$ " Extension, and $\frac{7}{8}$ "- $\frac{1}{2}$ " Extension.

The Priming series are made in $\frac{1}{2}$ ", $\frac{7}{8}$ "-18 and Metric sizes and have a small cock with a funnel opening installed upward. This priming cock facilitates starting at all times, especially in cold weather, as it conveys the priming gasoline to the sparking points, where the heat from the spark instantly ignites it. This is an advantage even where priming cocks are installed on engine, as ordinary cocks introduce gasoline to a point too far distant from the sparking points to be of any use.

A special plug is also made for motorcycles, in all sizes. All the above Red Head Products are made with care that insures Red Head Quality, and bear the trade name and trade mark that guarantees to all buyers fullest "RED HEAD VITRISTONE" Utility.



$\frac{1}{2}$ " Priming
also
 $\frac{7}{8}$ "-18 and Metric

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.

SPARK *Red Head* PLUGS

Red Head Spark Plug Service

Service as applied to the sale of Red Head Spark Plugs means that no matter where a user may be, any type or size of plug can be obtained during business hours, and, in thousands of garages, hardware stores and service stations at any time, day or night, holidays or Sundays.

This service is not confined to this country alone. Red Head Spark Plugs are known the world over, and the users of these plugs in foreign lands have had equally satisfactory results as have been realized in America.

That this service exists is due primarily to the development of a demand for Red Head Vitritone Spark Plugs by users who have spark plug knowledge and have insisted that they have what they know to be the



Big Boy
7/8"-18 1/2" Ext. for
Buick. Also
1/2"-1/2" Ext. for Overland
etc.

Best Spark Plug Made

This service is one of the greatest assets of the Red Head Spark Plug Corporation. But this organization would be utterly unproductive were it not that the quality of the plugs has been made even better than was ever before produced.

We are not dealing with promises, but with facts that have been clearly established and which are known to all dealers and users.

There is nothing "just as good" and there cannot be a substitute that will measure up to Red Head Vitritone standards of quality.

Unless we can satisfactorily demonstrate this by actual service we cannot expect to deserve the business that we confidently look forward to. We have supreme faith in quality and by the same token we have the same confidence in our resources to serve you.

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.

SPARK *Red Head* PLUGSRed  Head

TRADE MARK REG.

U. S. PAT. OFF.

Spark Plug Sales Helps

Business is largely influenced by observations of buyers and known quality stock is often sold by casual display. The sales department has developed a series of sales helps for dealers which will simplify transactions and greatly promote the sales of Red Head Vitristone Spark Plugs.

These include metal street signs, attractive signs for window display and trimming, and a handsome steel cabinet for showing the principal types and sizes of plugs generally used, with space for a stock sufficient for ordinary trade requirements.



Display Cabinet.

On the display tablet of the cabinet is mounted a Red Head Vitristone Spark Plug to meet every motor requirement, and an index specifying the type and size of plug for all well-known cars. The plugs and index are behind a glass front. The transaction is at the cabinet, the buyer selecting by index, having the most satisfactory service with no loss of time of the clerk, for the stock is always in order.

This cabinet is a handsome store ornament and may be placed conspicuously. It is steel, lithographed in red, is sightly and is a business builder.

In addition we have inaugurated a great publicity campaign to promote business for Red Head dealers. This will be systematic and constant—it will produce results.

The sales department is developing new store advertising features, that will attract and influence sales. It is issuing splendid literature for dealer distribution.

We are cooperating with dealers to promote business and are willing to go to extremes in this direction.

Dealers, let us show you how we can develop your spark plug sales. Users, if you are not a Red Head Booster you have never used our Red Head Vitristone Plug.

DO IT NOW!

(Continued)

Red Head Spark Plug Corp.
261 Broadway,
New York.


 SPARK *Red Head* PLUGS

Red  Head
TRADE MARK REG U.S. PAT. OFF.

Spark Plug Deliveries

Every business man keenly realizes the importance of obtaining stock as quickly as is practically possible after ordering. No matter what the quality or the value from the viewpoint of the dealer unless orders can be filled he cannot consider giving them. Buyers rarely purchase until the need is realized and expect that any concern doing a legitimate business will have sufficient stock to serve any reasonable demand.

Shortage of stock may be regarded as an explanation, but it does not serve customers and it does not encourage them to await the receipt of orders. The incident may be unfortunate for the user and a disappointment for the dealer, but it is a decided business disadvantage for the manufacturer who has merely failed when failure meant not only immediate loss, but no doubt future losses.

Orders Filled Upon Receipt

Is the purpose our Sales Department. Our organization has been systematized with the object of quickening the dispatch of all goods, and the Packing and Shipping Department have sufficient forces to keep pace with any demand.

The stock of plugs of all types and sizes in the stock rooms is sufficiently large to justify the statement that no order will be delayed, no matter what the proportions, and that so far as is humanly possible will be filled the same day as received.

This statement is made to emphasize the fact that any dealer can assure buyers of Red Head Vitristone Spark Plugs that they can depend upon HIS service in the same ratio that he depends upon Red Head service.

RED HEAD SPARK PLUG CORPORATION

261 Broadway

New York City

FACTORIES:
 New York City
 and Newtown, Pa.

Mormiles

TRADE MARK

Makes Your Motor Self-Cleaning

Adds Mileage

Mr. J. Newton Roe, Prof. of Chemistry, Chicago, Ill., says: I take great pleasure in recommending "Mormiles Tablets" as in my personal experience with a high powered car, I increased my mileage 27% by using them.

I also find in analyzing these tablets, that there is nothing in them to injure the finest motor, or in any way interfere with the working of the carburetor.

In Red
Cans Only



Increases Power

Garrett, Ind.,
March 31, 1919.
Mormiles Company,
226 So. La Salle St.,
Chicago.

Gentlemen:

Enclosed find check No. 3579 for \$8.00. Forward us by mail 1 dozen dollar size boxes of Mormiles "Pills."

My fellows down here seem to think they cannot run without them.

Yours respectfully,
Rollins & Elson.

Here is a gasoline intensifier and carbon eliminator *of real merit*, guaranteed not to injure the mechanism of the finest motor, carburetor or vacuum-feed system.

Mormiles energizes weak, logy, low-grade gasoline; improves lubrication; gives uniform combustion, perfect ignition, easier starting, quicker "pick up;" diminishes wear and tear on motor and insures longer life.

Mormiles will add 20% to 50% more miles per gallon; insure 30% more power; will free engine from carbon accumulations and "keep it clean as a whistle;" readily dissolves and is equally effective in gasoline, kerosene or distillate and becomes an integral, evenly distributed part of the fuel which passes out of the exhaust.

The Most Effectively-Beneficial Intensifier on the Market

Enthusiastic, unsolicited letters are coming in every day. Write for them. Hear the really remarkable results obtained. *Mormiles* promises to be of universal service to automobile and tractor owners.

SOLD ON MONEY-BACK GUARANTEE. 100 tablets—enough for 100 gallons of gasoline—\$1.

Jobbers and Dealers:

Mormiles is coming strong. Nothing can stop it.
Get in early. Write us for attractive proposition.

This coupon worth \$1. Use it today.
Mormiles Co., 226-8 S. La Salle St., Chicago, 99
Enclosed find \$1 for two regular \$1 cans of Mormiles,
a special offer for introductory purposes only—
where dealer cannot supply.
Name
Address

(When Writing to Advertisers, Please Mention the Automobile Journal.)

PRESSMAN

Liberty Tires



Omar Tires

EVERYWHERE

Longest Service When Measured
by the Price You Pay

OMAR and LIBERTY tires are made and sold to a definite policy—highest quality obtainable and a guarantee of service.

It means absolute satisfaction to users. OMAR and LIBERTY tire dealers will advise you that these tires will deliver full service mileage and the purchaser will receive full value.

There is no condition, no uncertainty. The tires must afford 100 per cent. service.

Measured by first cost and by mileage guarantee OMAR and LIBERTY tires are unequaled; the saving in any event is such they are the most economical tires to use.

Back of this guarantee is the manufacturer. Unless the tires satisfy he is the loser. Only by maintenance of the highest quality can his prestige and the business of his distributor endure.

Compare these tires and the prices with all others. Contrast the guarantees. Consider the service of each. Then you will equip with either OMAR or LIBERTY tires.

Then you'll understand fully what you get for what you pay and what a positive guarantee means to you.

DEALERS: OMAR and Liberty production is rapidly increasing. We can offer a limited number of splendid dealer contracts. The trade discounts are liberal. You can meet any competition and make more than good profits.

Correspondence invited. Full information at request.

PRESSMAN TIRE COMPANY
PHILADELPHIA PENNSYLVANIA

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Your Tire Valves

The object of a tire valve is to retain the air that has been pumped into the tire.

The SCHRADER UNIVERSAL VALVE has been fulfilling this object for more than twenty-five years; first with Bicycle Tires and later with Automobile and Motorcycle Tires, also Aeroplane Tires and Heavy Truck Tires, and it has done this with such thoroughness and efficiency that today every Tire Manufacturer in the United States equips his tubes with that particular valve.

On frequent occasions the tire makers, justly proud of the achievements of their tires, have published the fact that this or that car had crossed the continent "with the same air in the tires with which they started."

Such a performance speaks well for the tires, but it also speaks well for the valves on those tires.

Obviously, a tire is only as good as the valve with which it is equipped, and the best tire in the world will give a very poor account of itself if the valve on it leaks.

There have been none to question the ability of the SCHRADER UNIVERSAL VALVE to act properly as a retainer of air; every year some little refinement has been added to further improve it, until today it is recognized by Tire Manufacturers as the only valve doing justice to their tires and offering the guarantee of perfect service which they require.

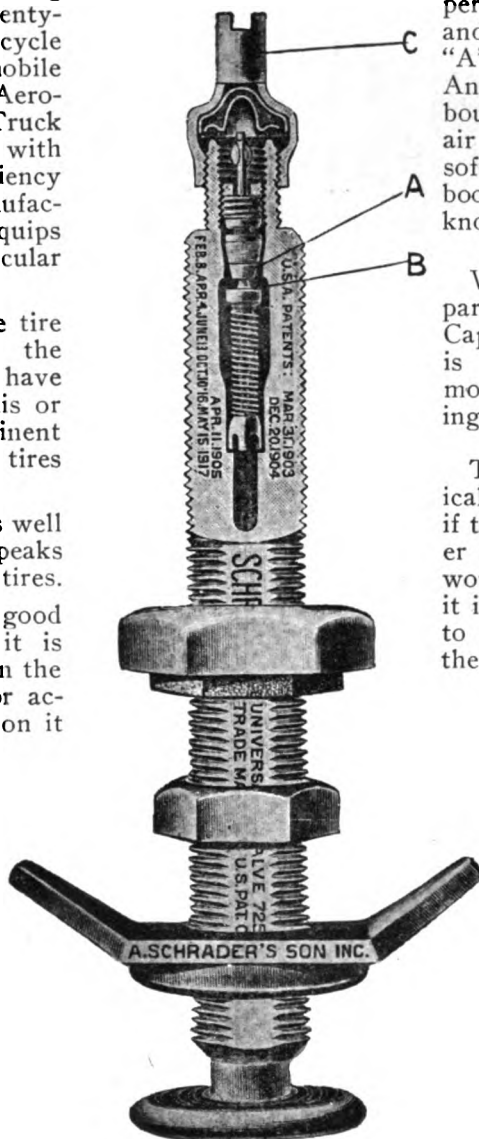
It is not enough, however, for a tire valve to be perfect. It must remain perfect. Unfortunately, it cannot remain perfect if dirt or dust or foreign substances are permitted to enter the valve-stem and lodge between the valve-seat "A" and the rubber washer "B." Any obstruction at this point is bound to cause a slow escape of air and an eventual soft tire—and soft tires are hard on the pocket-book as all experienced Motorists know to their sorrow.

We urge you, therefore, to pay particular attention to your Valve Cap "C" and to make sure that it is always put back over the mouth of the valve after pumping the tire or testing its inflation.

The cap in itself would hermetically seal the air within the tire if there were no plunger or washer further down; however, this would not be a practical valve as it is necessary to have a plunger to retain the air when inflating the tire.

The Cap is the second absolutely air-tight closure of the SCHRADER UNIVERSAL VALVE and in addition to this it is a protection to the valve-plunger by keeping dust, mud or foreign matter of every kind from entering the valve-stem.

Keep this foreign matter out by screwing your valve cap down firmly over the mouth of the valve and you will never know what a leaky valve is.



A. SCHRADER'S SON, Inc.

800 Atlantic Avenue

Brooklyn, N. Y.

LONDON

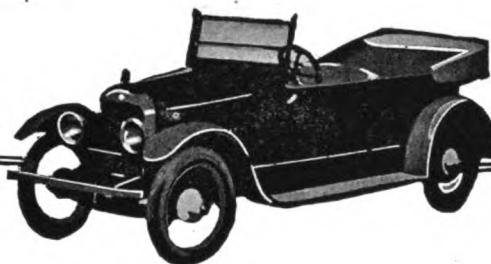
CHICAGO

TORONTO

(When Writing to Advertisers, Please Mention the Automobile Journal.)

COSTLY PAINTING PREVENTED

REFINISH YOUR CAR



Preserve the finish on your car, the Original Varnish on your car won't last forever—use Panvar and keep your car in respectable condition—to ride in a shoddy, dull, worn, second-hand looking car is downright foolishness, when you can give your car that shipping date appearance in a couple hours time, for about \$3.00 and add \$300 to the looks of your car and not lay up the car a single day.

Panvar
TRADE MARK

Self-Leveling Laque

WHAT PANVAR IS

A lustrous, lasting, transparent liquid to take the place of varnish, beats varnish in lustre, lasts quite as long, is self-leveling, not said to be, *but actually is*, for Panvar is as thin as water, so it can level itself and not show brush streaks, but when it dries it dries harder than varnish—free from stickiness, can be used on the metal, wood, seats, tops and plated parts—of itself Panvar cannot turn white, creamy or craze—it's a lasting, living up preparation that has varnish beaten in a hundred ways—ANY NOVICE FOLLOWING SIMPLE INSTRUCTIONS CAN APPLY WITH ASSURANCE OF SUCCESS. PANVAR is prepared for cars where ground paint is in good condition, but varnish has become dull, worn, or needs livening up. Such cars can be made to look like new in an hour's time.

FIX-A-MAR COLORS IN TUBES

If there are bruised places in the ground coat of paint, buy a tube of our FIX-A-MAR color to touch up the marred parts, at \$1.00 per tube delivered. SEND STAMPS FOR COLOR CARD.

TWO QUARTS ENOUGH FOR LARGE CAR

If finish is much worn, two coats may be necessary. Easy proposition for anyone, so why neglect your car, or pay a big price for an expensive repainting job.

SEND \$1.50 for ONE **QUART**
3.00 " TWO
5.50 " FOUR

WE PAY PARCEL POST CHARGES

Add 25c. per quart to points west of Rockies

SMALL TEST SAMPLE 25 CENTS

EXCLUSIVE HOUSE TO HOUSE DISTRIBUTING AGENTS
WANTED, PROFITABLE WORK AND TERRITORY

MOTORISTS' DIRECT ORDER COUPON 7-19

THE PANVAR CO. 618 Bulletin Bldg. Philadelphia, Pa.

Send by express or parcel post paid.....quarts

Name.....
Address.....

Garage Owners and Dealers, write for discounts and sales helps.

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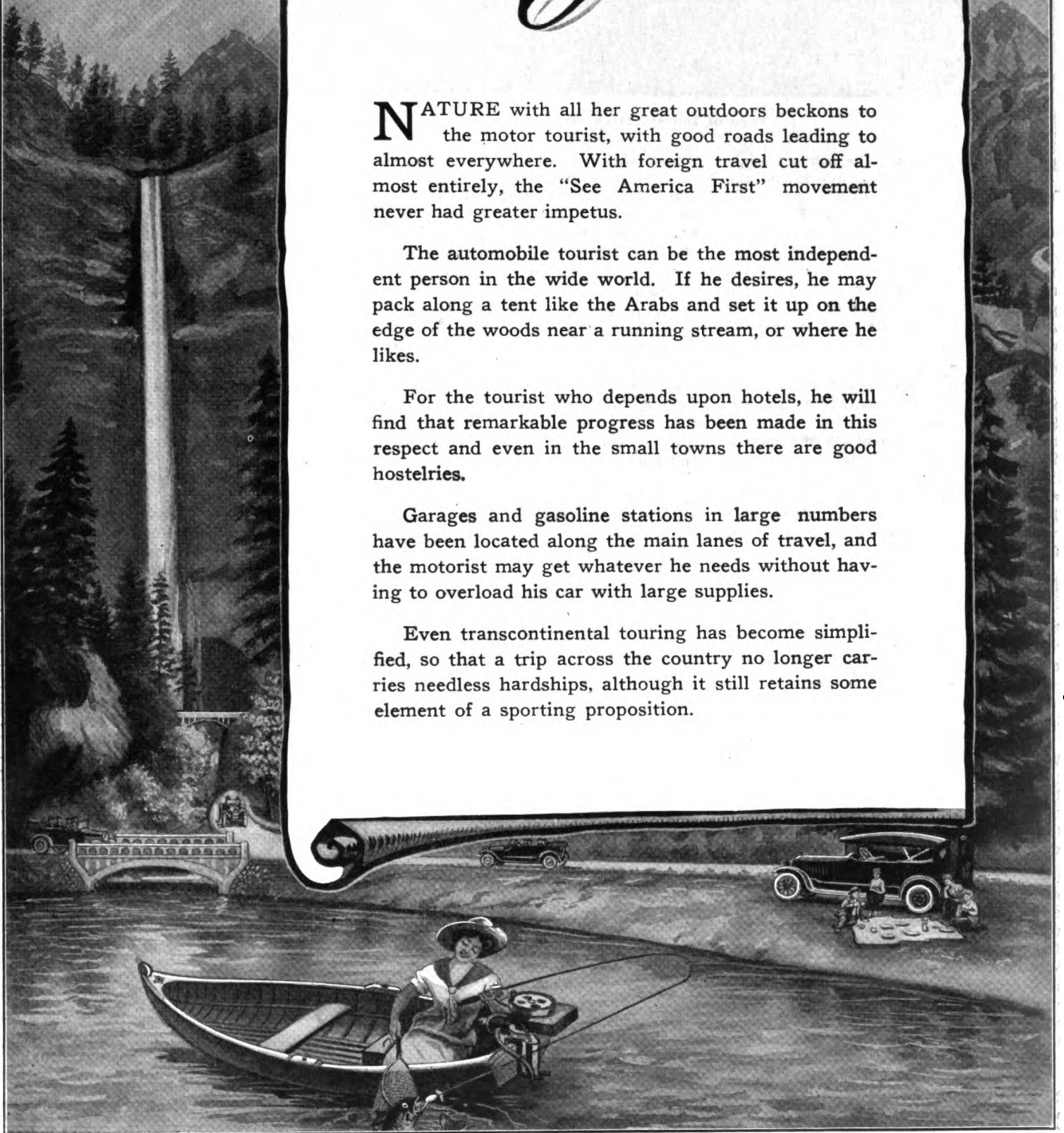
NATURE with all her great outdoors beckons to the motor tourist, with good roads leading to almost everywhere. With foreign travel cut off almost entirely, the "See America First" movement never had greater impetus.

The automobile tourist can be the most independent person in the wide world. If he desires, he may pack along a tent like the Arabs and set it up on the edge of the woods near a running stream, or where he likes.

For the tourist who depends upon hotels, he will find that remarkable progress has been made in this respect and even in the small towns there are good hostelries.

Garages and gasoline stations in large numbers have been located along the main lanes of travel, and the motorist may get whatever he needs without having to overload his car with large supplies.

Even transcontinental touring has become simplified, so that a trip across the country no longer carries needless hardships, although it still retains some element of a sporting proposition.





Type of Lincoln Highway Road in State of Pennsylvania.

MOTORISTS using the Lincoln Highway between New York and the Pacific coast will find many detours on this great artery of traffic during this year. More than \$12,000,000 will be expended in permanent Lincoln way improvement. Many states have decided upon the greatest highway construction program ever undertaken in the history of the country, and the work in rebuilding the highway has started in many of the 96 counties traversed.

Every effort will be made by the various state highway departments to select the best and shortest detours available; keep them in good condition and well marked. The Lincoln Highway Association is supplying a standard official red, white and blue temporary detour sign. These signs will be erected in each county where detours are necessary for the convenience and comfort of tourists.

Since the inception and announcement of the Lincoln Highway in 1913 this transcontinental road has had a wonderful growth and development. There remains a tremendous amount of work to be accomplished, but, nevertheless, the work which has been done enables any man to plan a transcontinental trip, knowing exactly what route he will follow, exactly through what cities he will go, and to determine in advance an approximate schedule of arrival at the different points, and to estimate with a degree of accuracy the length of time it will take him to complete his journey and what the expense of the trip will be.

No Hardships.

A journey from the Atlantic to the Pacific is still something of a sporting proposition, yet the tourists, although they must cheerfully put up with some unpleasantness, will meet no hardships or experiences which make the trip of undue severity, even to a woman. If the tourist encounters perfect weather entirely

across the country, absolutely no difficulties may be considered. In fact, practically the only difficulties at present attendant upon a transcontinental drive over the Lincoln Highway are the result of unfavorable weather conditions.

This is due to the fact that so much of the road is yet natural dirt highway in Nebraska and Iowa, and while kept in condition by the constant endeavor of the local communities in dry weather, a season of unusual rainfall inevitably makes driving difficult. The motorist is advised to take as a precept the statement that when it rains in the middle west or west, the thing to do is to stop and not attempt to continue the journey until the rainy spell is over and the roads have had a day or two to dry up.

While it is possible to drive across the United States without encountering a single day of rain, it is highly improbable. The tourist can drive anywhere between New York and the Illinois-Iowa line either during or after heavy rainstorms without difficulty, but once west of this point it is wise to delay the trip, as many days as necessary, stopping comfortably at a hotel, if heavy rains are encountered.

The tourist driving the Lincoln Highway should consider the fact that many of the long stretches of perfect construction which he will pass over would have been, a few years ago, impassable bogs if wet or inches deep in dust if dry. As late as 1908 and 1909 transcontinental travel by motor was still an adventure for the intrepid and was undertaken almost solely by automobile manufacturers either as a test or advertising trip. The tourist of this year cannot appreciate,

unless he attempted a similar drive over the transcontinental route four or five years ago, the vast extent of the improvement which has been accomplished.

Historic Interest.

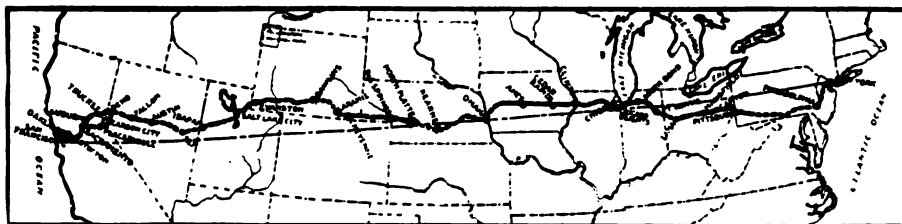
Beginning in New York, the Lincoln Highway passes through 11 and connects 12 states before it reaches the Golden Gate. Much of the highway passes through or near places of historic interest. From Trenton, Valley Forge, Gettysburg, to the scenes of the Indian fights and savage massacres along the line of the western pioneer advance, the highway links together our heroic struggle for independence, our way for national unity and the bloodstained steps of our emigrant progress from the Mississippi across the plains and mountains to the western sea. Moreover, from the branches stretching out on each side of this highway one can visit most of the spots where American history at its various periods reached its climaxes.

Across New Jersey the Lincoln Highway is macadam entirely, but due to the tremendous traffic which it has carried, especially the motor truck trains carrying government supplies to Atlantic coast points, sections have suffered deterioration. Improvement of these sections, however, is under way. State Engineer George W. Goethals has advocated construction of a more permanent type of pavement.

The Lincoln Highway is smooth, well kept macadam, approximately 400 miles across Pennsylvania through the Allegheny mountains. In the state there are only about 14 miles of Lincoln Highway unimproved.

Short detours may be necessary in Ohio because of improvement being made in the highway. Each of the 13 counties of the state traversed by the highway is rushing permanent construction.

In crossing the entire State of Indiana



The Lincoln Highway.

less than 20 miles of really bad roads are encountered. There are long stretches of brick and concrete highway. In dry weather the trip across Illinois, Iowa and Nebraska can be made over well-graded, dragged and drained dirt roads, but in the latter two states especially rain furnishes a barrier to all traffic.

Sections of the highway in Wyoming gave way under the exceptionally heavy traffic, but the State Highway Department, with the aid of the county authorities all along the line, has rushed adequate repairs to take care of this year's traffic.

That part of the Lincoln Highway known as the desert section is met in Utah and Nevada, and the drive from Salt Lake City to Ely should not be lightly attempted. The road becomes impassable under adverse weather conditions, but when dry the route can be traversed without serious difficulty. In California the roads are all the tourist could desire.

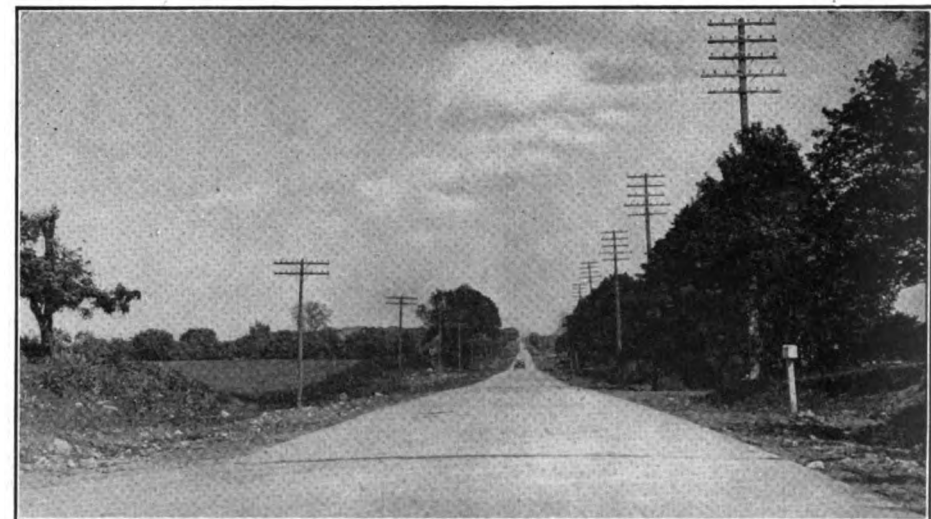
Highway 3322 Miles.

The distance from New York to San Francisco via the Lincoln Highway is 3322 miles. The usual pleasure party, with easy driving and only a nominal amount of sight-seeing at the different points, can make the trip in 20 to 30 days, driving approximately 10 hours per day. This means that approximately 18 miles per hour must be made during the driving time as an average.

Many long stretches can be covered at high speed, as the wide open stretches of the West, where little traffic is encountered, enable the driver to make with safety any speed of which the car is capable.

The entire expense of a car and four passengers from New York to San Francisco should not at any time exceed \$5 a day per passenger under normal conditions, according to Field Secretary H. C. Ostermann of the Lincoln Highway Association. This sum will include everything except tire expense and unforeseen accidents. Gasoline, oil and all provisions have been figured in this estimate, but not repairs to the car caused by breakage or wear. The expense of the trip can be increased to any figure, of course, by making use of high priced hotels in the larger cities for extended periods.

The rapid improvement of the Lincoln Highway, the national interest in it and the yearly increasing volume of trans-continental touring have tremendously stimulated the improvement of accommodations along the route. There are many hotels catering almost solely to



Road in St. Joseph County, Indiana.

the tourist. Even in the small communities the tourist will find good service. The development of adequate garage facilities has kept pace.

Suggested Equipment.

The Lincoln Highway Association makes the following recommendations as to equipment:

Car equipment—Lincoln Highway sustaining membership radiator emblem, pair Lincoln Highway pennants; two sets tire chains, six extra cross chains, one set chain tightener springs, one set tools, two jacks, pair good cutting pliers, two extra tire casings, four extra inner tubes, casing patch, three spark plugs, eight feet high-tension cable, eight feet low-tension cable, extra valve and spring, complete; three cans oil in one-gallon cans, axe, shovel, upper radiator connection, lower radiator connection, one set lamp bulbs, motometer.

Optional camp equipment—Five-gallon milk can with stay straps (for water west of Cheyenne, Wyo.), two-quart canteen, 10-inch frying pan, 12x24-inch grate for camp fire, two-quart coffee pot, four large cups, four five-inch diameter pans, four knives, auto camp stove, six forks, six teaspoons, two cooking spoons, four soup spoons, dipper, eight eight-inch diameter plates, two stew pots (to nest), three-prong cooking fork, butcher type carving knife, three bars soap, six dish towels, can opener, bread pan (for fish washing), bucket with lid, can for pepper, one dozen patent egg carrier, cork screw, air tight two-pound coffee can, air tight 1½ pound teacan.

Suggested personal equipment for each man—Lincoln Highway sustaining mem-

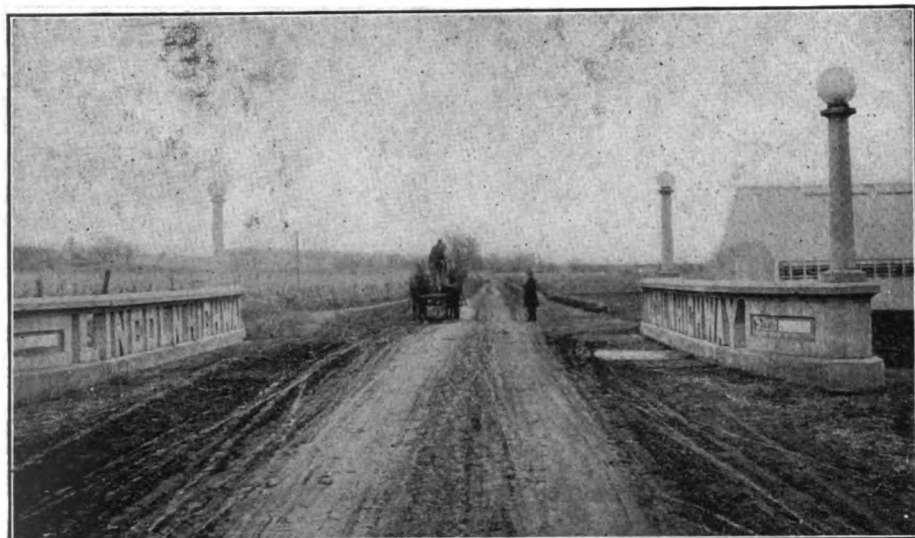
bership card, Lincoln Highway label button, waterproof (warm type) sleeping bag, waterproof 15x36-inch duffle bag (no suit case or satchel should be carried), pair light moccasins, two pair khaki or Duxbac riding trousers, two army officer's shirts (best quality for warmth), pair light weight shoes, pair heavy weight shoes (loose enough for heavy socks), two pair heavy wool socks, two suits heavy wool underwear, two suits light linen or cotton underwear (to wear under the wool or alone—don't wear wool next to skin), two bandana neck kerchiefs, six pocket handkerchiefs, three pair medium weight socks, teamster's canvas coat, slicker and flannel, lined and with a high collar; pair canvas puttees, stick camphor ice, two dozen cathartic tablets, package gauze, three rolls gauze bandages, 1½ inch wide; tube vaseline (for guns and burns), tooth brush, comb, knife (strong), two or three blades; pocket compass, safety razor, can shaving soap, powder; shaving brush, small mirror, needles and thread, package bachelor buttons, pair small scissors, two pair gauntlet gloves, leather belt, inexpensive open-face watch, 6x7 feet rubber sheet, pair yellow goggles, pair white goggles, square yard mosquito netting, camera, cap, can tooth paste.

Provisions for Campers.

Suggested provisions for campers—Slap best bacon, three cans peaches, three cans pineapple, three cans tomatoes, three cans baked beans, one dozen eggs, four loaves bread, sack salt, can pepper, pound butter (not necessary), two pounds rice, 10 pounds potatoes, six



Through the Land of Agricultural Plenty—the Lincoln Highway in Nebraska.



Arch Bridge on Lincoln Highway East of Tama, Ia.

cans small size evaporated milk, pound sugar, package (dozen boxes) safety matches, two pounds cracked wheat, pint pickles, box graham crackers, two pounds coffee (ground), $\frac{1}{2}$ pound tea, roll surgeon's plaster one inch wide, five yards (for sealing cans, etc.), roll corn, three cans fresh fruit, often as possible.

It is not at all necessary to carry much food, as supplies can be obtained all along the route. It is best, however, to have some food in the car west of Salt Lake City. Camping out is not at all necessary.

Advice for Tourists.

Among the advice given to tourists by the Lincoln Highway Association is the following:

"Don't wait until your gasoline is almost gone before filling up. Always fill your tank at every point gasoline can be secured, no matter how little you have used from your previously supply.

"Don't allow your water can (west of Cheyenne, Wyo.) to be other than full of fresh water and fill it whenever you get a chance. You might spring a leak in your radiator, or burst a water hose,

"Don't allow the car to be without food of some sort at any time west of Salt Lake City. You might break down out in the desert and have to wait some time until the next tourist comes along.

"Don't buy oil in bulk when it can be avoided. Buy it in the one-gallon original cartons.

"Don't fail to have warm clothing in the outfit. The high altitudes are cold and the dry air is penetrating.

"Don't fail to put out your camp fire when leaving.

"Don't forget the yellow goggles. In driving west you face the sun all afternoon and the glare of the western desert is hard on the eyes.

"Don't forget the camphor ice. The dry air of the west will crack your lips and fingers without it.

"Don't drink alkali water. Serious cramps result.

"Don't wear new shoes.

"No extra gasoline need be carried, although it is advisable to have an extra tank for use in case of emergency, such

as a leak in your gas tank or a break in your gasoline connections."

Western Feeder Roads.

The Lincoln Highway Association announces that in many of the inquiries coming to the association, concerning the transcontinental drive, advice is requested concerning the best road to follow for a side trip to Denver, Col. Motorists, both eastward and westward bound, will find it to their advantage to follow the Lincoln Highway proper to Cheyenne, Wyo., striking south from this point to Denver, a distance of 141 miles. This road is in good driving condition at practically all times. In Colorado it is a state highway.

The Denver-Yellowstone Highway leads from Denver to the southern entrance of the Yellowstone National Park, striking the Lincoln Highway at Laramie, Wyo., and following it to Rawlins, Wyo., and thence north to the southern entrance to the park by way of Lander and DuBois.

For the Lincoln Highway tourist desirous of visiting the Yellowstone National Park, a direct route to the eastern entrance is offered by means of the Yellowstone Highway which intersects the Lincoln Highway at Cheyenne, Wyo. The Yellowstone Highway leads north from Cheyenne via Wheatland, Douglas, Casper, Thermopolis, Basin and Cody, Wyo., to the eastern park entrance, a distance of a little more than 500 miles from Cheyenne.

The road running southwest from Ely, Nev., by way of Goldfield and Tonopah, into southern California and ending at Los Angeles, is one of the main line branches of the Lincoln Highway and the one probably most used by Lincoln Highway tourists. The road is known as the Mid

land Trail. It is a short cut from the Lincoln Highway into southern California, the distance from Ely on the Midland Trail to Los Angeles being 570 miles and the distance from Ely to San Francisco via the Lincoln Highway being 606 miles. Ely is the junction point for all traffic coming from northern and southern California and heading east, and the dividing point for all Lincoln Highway western travel seeking the Pacific coast.

Tioga Road.

A trip through the Yosemite National Park may well be a part of the itinerary of the tourist westward bound upon the Lincoln Highway. At any time between the middle of July and the middle of September a practical route through the park is offered via the Midland Trail and the Tioga Road. The tourist may leave the Lincoln Highway at Ely, Nev., and travel south on the Midland Trail by way of Tonopah and Goldfield to Big Pine, leaving the Midland Trail at Big Pine and traveling north by way of Bishop to Monto Lake, crossing through the Yosemite Park and rejoining the Lincoln Highway again at Stockton, Cal., by way of the Tioga Road.

Jefferson Highway.

The Jefferson Highway intersects the Lincoln Highway about midway of its course, in Iowa. As it winds its way south from Winnipeg, the Jefferson traverses the rich area of the great glacial deposits in Manitoba, through Minnesota southward until it comes to the upthrust of the Ozark Mountains, then its trend is westward around the western spurs of these mountains, till it crosses the Red River into Texas, at Denison. From there it takes a southeasterly course through Louisiana, over the alluvial deposit of the Red and Mississippi rivers.

The Lincoln Highway Association publishes "The Complete Road Guide of the Lincoln Highway," which sells for \$1.50 and which is very valuable to the Lincoln Highway tourist. The national headquarters of the association is in Detroit, Mich.

For convenience the route to San Francisco has been divided into 10 sections, each comprising the distance between two main points, as follows:



At a Western Cross Roads.

First—New York to Philadelphia, 93.6 miles.

Second—Philadelphia to Pittsburgh, 292.2 miles.

Third—Pittsburgh to Ft. Wayne, Ind., 321.9 miles.

Fourth—Ft. Wayne to Clinton, Ia., 319.7 miles.

Fifth—Clinton to Omaha, Neb., 387.7 miles.

Sixth—Omaha to Cheyenne, Wyo., 520.8 miles.

Seventh—Cheyenne to Salt Lake City, Utah, 483.5 miles.

Eighth—Salt Lake City to Ely, Nev., 288.4 miles.

Ninth—Ely, Nev., to Reno, Nev., 347.8 miles.

Tenth—Reno to San Francisco, 267.9 miles.

There is also a section No. 11 for the route from Reno to Sacramento, Cal., east and south of Lake Tahoe via Carson City, a distance of 168.4 miles.

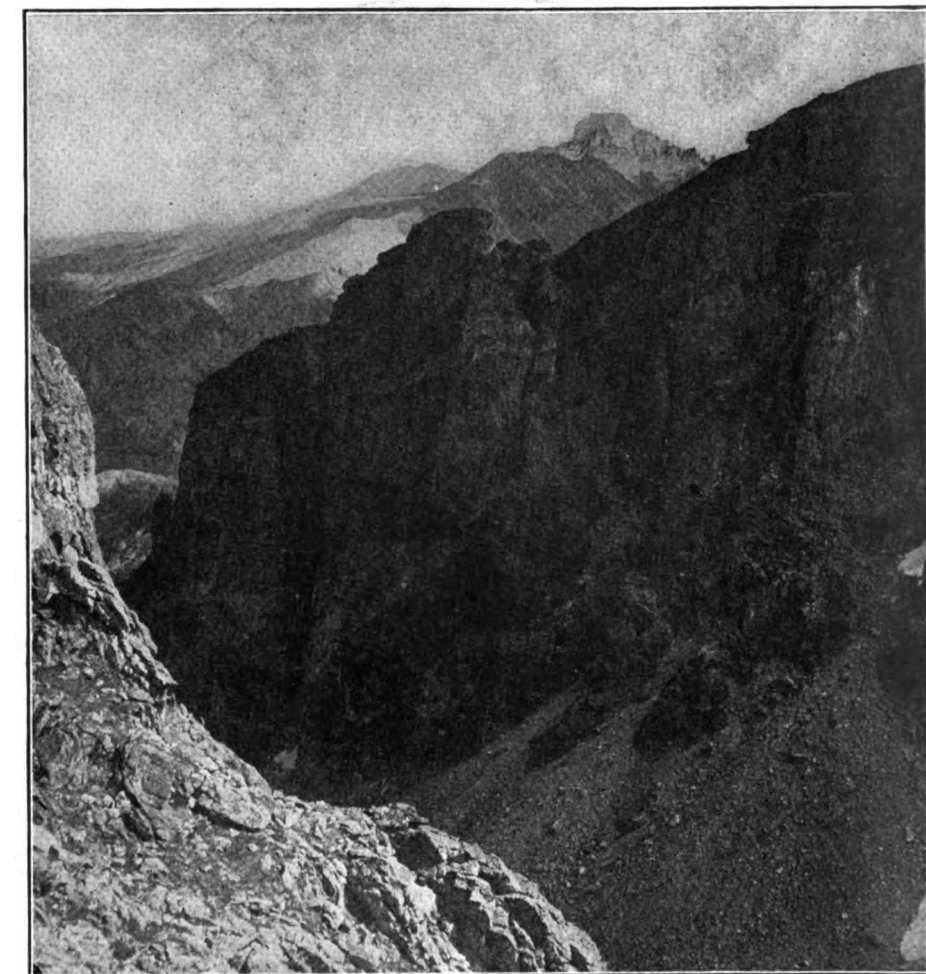
Notes for Tourists.

By A. L. WESTGARD.

A TRANSCONTINENTAL tour is now a comparatively easy matter provided the motorist carries along the necessary equipment. Until very recently a trip by automobile across the continent has been somewhat of a hazardous adventure, as well as an expensive and tiresome undertaking, often times requiring some degree of endurance, but fast improving road conditions on the established routes tend more and more to make the journey of unusual enjoyment and full of interest rather than a task to be accomplished by laborious effort.

Formerly it was advisable to carry all kinds of emergency tools on a transcontinental trip, and also a fairly complete camping outfit; but, with the steady increase in cross-country motor travel, better accommodations have been provided in the various towns and in practically every village along the main highways, the tourist can secure all necessary supplies. It is still recommended, however, to be provided with a shovel, axe, 100 feet of five-eighths inch rope and a tarpaulin. The likelihood of some mud east of the Rocky mountains makes this equipment a probable necessity. A couple of desert water bags should be secured in the arid country and may be hung at some place on the car, so that evaporation of the water which soaks through the canvas will cool the contents. Fill them with soft water at every opportunity.

Load the car light. Do not carry a quantity of unnecessary baggage. Remember you can find plenty of gasoline along the main traveled routes and it is not necessary to carry an extra supply. Fill your tank at every station, whether empty or not, and you will always have a sufficient supply of gas to reach the next place. Of course, it is best to carry a few parts for the car and each car should start out with new casings all around, and a couple of spares, all the same size if possible, with the addition of a few good inner tubes. If you have



View Looking Across Mount Halley to the Western Side of Longs Peak in Rocky Mountain National Park.

bad luck with blow-outs, new casings can be purchased in most any town along the route and usually at standard prices.

Plenty of warm clothing should be taken along. It is not necessary to carry any cooking utensils unless you are camping out, in which case, of course, bedding must be added to the equipment. Remember you can find a stopping place every night. It is a good plan to carry emergency rations, such as chocolate bars and seeded raisins.

For those expecting to camp out a considerable part of the way, additional equipment will be called for. In such cases we suggest a light automobile tent with ground cloth attached and a collapsible aluminum pole, a camp lantern, and an aluminum cooking outfit, two blankets per person, with pillows. Various kinds of auto camping outfits are being manufactured and these can be purchased at a comparatively small cost. As there are opportunities for hunting and fishing, a rifle or shotgun and fishing tackle are optional equipment.

ITINERARY.

Night Stops—Philadelphia, Gettysburg, Bedford, Pittsburgh, Pa.; Canton, Lima, O.; South Bend, Ind.; Chicago, Ill.; Clinton, Marshalltown, Ia.; Omaha, Kearney, Neb.; Julesburg, Denver, Col.; Cheyenne, Rawlins, Green River, Wyo.; Salt Lake City, Kearney's

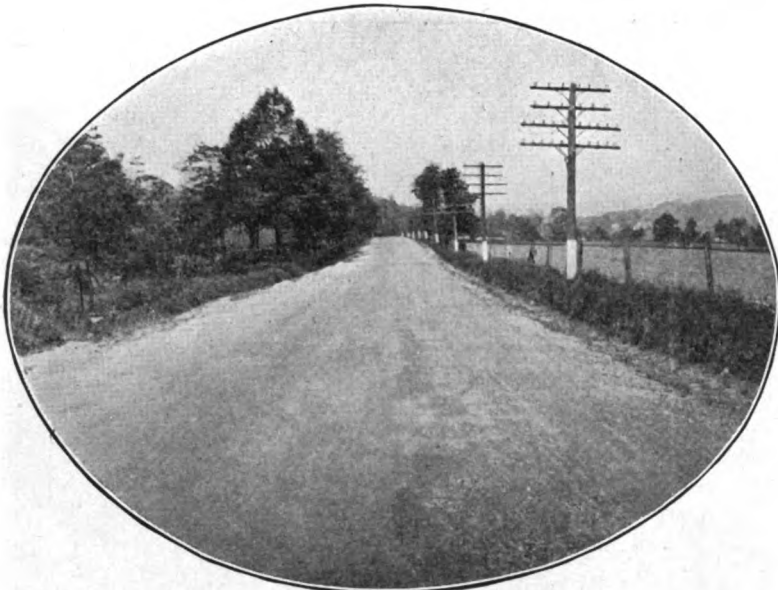
Ranch, Utah; Ely, Austin, Reno, Nev.; Sacramento, San Francisco, Cal.

NEW YORK-PHILADELPHIA.

	Miles		Miles
New York.....	0.0	Franklin Park.....	41.8
Weehawken.....		Kingston.....	48.3
(via ferry)....	3.7	Princeton.....	51.5
Jersey City.....	8.0	Lawrenceville.....	56.4
Newark.....	12.2	Trenton.....	62.5
Ellisabeth.....	17.1	Oxford Valley.....	68.7
Rahway.....	23.0	Glen Lake.....	70.6
Isella.....	27.0	Langhorne.....	71.6
Menlo Park.....	28.0	La Trippe.....	76.6
Metuchen.....	29.8	Busleton.....	81.7
New Brunswick.....	35.1	Philadelphia.....	93.6
Highland Park.....	36.4		

PHILADELPHIA-PITTSBURGH.

	Miles		Miles
Philadelphia.....	0.0	W. Fayetteville.....	137.4
Overbrook.....	6.4	Chambersburg.....	141.1
Ardmore.....	8.4	St. Thomas.....	148.5
Bryn Mawr.....	9.7	Fort Loudon.....	154.5
Wayne.....	14.1	McConnellsburg.....	162.0
Berwyn.....	17.1	Harrisonville.....	169.0
Paoli.....	20.4	Breezewood.....	180.5
Whiteford.....	29.4	Everett.....	188.9
Dowington.....	32.5	Mt. Dallas.....	190.0
Thorndale Sta'm.....	34.6	Bedford.....	197.8
Coatesville.....	38.8	Wolfsburg.....	200.5
Sadsburyville.....	42.8	Schellsburg.....	207.1
Mt. Vernon.....	47.0	Buckstown.....	218.8
Gap.....	49.5	Kanter P. O.....	222.8
Kinzers.....	51.8	Stoyestown.....	223.8
Leaman Place.....	55.2	Farrilton.....	229.8
Paradise.....	56.7	Jenners.....	230.3
Soudersburg.....	60.7	Jennerstown.....	231.3
Lancaster.....	65.0	Laughlinton.....	239.8
Mountville.....	71.4	Ligonier.....	243.1
Columbia.....	75.1	Youngstown.....	251.7
Wrightville.....	76.9	Greensburg.....	261.6
York.....	88.0	Grapeville.....	265.7



Road in Lancaster County, Pa.

Abbottstown...	102.9	Adamsburg...	268.4
New Oxford...	106.8	Irwin	271.2
Gettysburg...	116.6	Jacksonville...	272.5
Seven Stars...	120.5	E. McKeesport...	278.7
McKnightstown...	122.4	Turtle Creek...	281.0
Cashtown...	124.3	E. Pittsburgh...	282.1
Grafenbourg...	129.2	Wilkinsburg...	284.9
Calendonia Pk...	131.2	Pittsburgh...	292.2
Fayetteville...	135.6		

PITTSBURGH-FORT WAYNE.

Miles		Miles	
Pittsburgh...	0.0	Massillon...	100.5
Bellevue...	5.8	W. Brookfield...	111.6
Avalon	6.6	E. Greenville...	113.9
Glenfield	10.4	Dalton	118.6
Sewickley	17.2	East Union...	124.8
Fairbanks	18.5	Wooster	130.8
Ambridge	21.0	Jefferson	134.8
Economy	21.8	New Pittsburgh...	140.2
Baden	25.0	Rowsburg	143.5
Couway	26.4	Ashland	150.7
Freedom	28.2	Mansfield	164.2
Rochester	30.1	Ontario	171.0
Bridgewater	30.8	Gallion	179.2
Beaver	31.4	Bucyrus	193.0
Eather	41.7	Nevada	201.0
Ohioville	43.0	Up. Sandusky...	209.0
Smith's Ferry...	46.0	Forest	222.2
E. Liverpool...	50.6	Dunkirk	230.1
Lisbon	66.4	Dois	233.9
Hanoverton...	75.9	Ada	240.8
Kensington...	77.0	Lima	258.5
E. Rochester...	81.7	Gomer	268.1
Minerva	85.7	Delphos	276.4
Robertsville...	91.5	Van Wert	289.2
Osnaburg	97.0	Fort Wayne...	321.9
Canton	101.8		

FORT WAYNE-CLINTON.

Miles		Miles	
Fort Wayne...	0.0	Chic. Heights...	154.9
Churubusco...	13.6	New Lenox...	172.0
Merriam	22.6	Joliet	178.1
Wolf Lake	25.6	Plainfield...	187.7
Kimmell	30.4	Aurora	200.7
Ligonier	36.4	Mooseheart...	205.6
Benton	46.7	Butavia	209.6
Goshen	53.8	Geneva	212.6
Elkhart	62.0	De Kalb	234.9
Osceola	68.0	Malta	239.8
Mishawaka...	72.1	Creston	245.6
South Bend...	76.1	Rochelle	251.7
New Carlisle...	91.7	Ashton	263.1
La Porte	103.7	Franklin Grove...	267.7
Westville	115.5	Dixon	277.0
Valparaiso...	126.5	Sterling	290.2
Deep River...	134.5	Morrison...	304.9
Merrillville...	141.5	Fulton	316.4
Schererville...	147.3	Clinton	319.7
Dyer	150.3		

CLINTON-OMAHA.

Miles		Miles	
Clinton	0.0	Ames	197.6
DeWitt	19.5	Ontario	199.3
Grand Mount...	25.0	Jordan	207.9
Calamus	31.0	Boone	213.7
Wheatland...	35.2	Ogden	223.3
Lowden	41.2	Grand Junction...	235.3

Clarence	49.7	Jefferson	243.6
Stanwood	54.4	Scranton	253.6
Mechanicsville...	60.0	Glidden	265.1
Lisbon	66.9	Carroll	284.1
Mt. Vernon...	68.6	West Side...	296.4
Marion	81.5	Vall	302.2
Cedar Rapids...	86.7	Dennison	311.2
Belle Plaine...	122.2	Arion	319.1
Chelsea	129.0	Dow City	321.8
Gladstone	135.8	Dunlap	329.9
Tama	140.0	Woodbine	341.4
Montour	148.3	Logan	352.0
Le Grand	152.5	Missouri Val...	360.7
Marshalltown...	162.2	Loveland	365.0
LaMoille	169.6	Honey Creek...	369.8
State Centre...	176.3	Crescent	375.6
Colo	183.7	Council Bluffs...	383.1
Nevada	190.7	Omaha	387.7

OMAHA-CHEYENNE.

Miles		Miles	
Omaha	0.0	Gothenburg...	259.3
Elkhorn	10.2	Brady	272.4
Waterloo	19.5	Maxwell	281.3
Valley	23.0	North Platte...	293.9
Fremont	34.9	Hersey	307.0
Ames	42.8	Sutherland...	314.4
North Bend...	50.9	Paxton	327.4
Rogers	58.1	Roscoe	339.7
Schuyler	66.5	Ogallala	347.1
Richland P. O.	74.9	Brule	357.5
Columbus	88.1	Megeath	362.2
Duncan	92.3	Big Springs...	368.0
Silver Creek...	102.5	Chappell	389.8
Clarks	113.6	Lodge Pole...	399.1
Central City...	124.5	Sunol	405.9
Chapman	134.7	Sidney	417.1
Grand Island...	147.5	Brownson...	426.2
Alda	155.3	Potter	435.6
Wood River...	164.8	Dix Station...	444.6
Shelton	174.0	Kimball	454.1
Gibbon	180.0	Bushnell...	466.0
Kearney	192.7	Pine Bluffs...	476.0
Odessa	201.8	Egbert	486.1



Elm Creek	208.7	Burns	492.6
Overton	217.9	Hillsdale	500.4
Lexington	220.1	Archer	511.8
Cosad	247.1	Cheyenne	520.8

CHEYENNE-SALT LAKE CITY.

Miles		Miles	
Cheyenne	0.0	Latham Station...	212.2
Corlett Station...	5.7	Wamsutter	220.2
Borie Tower...	9.3	Tipton Station...	236.5
Otto Station...	14.2	Point of Rocks...	265.2
Granite Canyon...	18.7	Thayer Junction...	272.5
Buford	27.2	Rock Springs...	281.7
Sherman Hill...	32.8	Green River...	296.5
The Siding	39.2	Bryan Station...	309.8
Laramie	57.0	Granger Junction...	325.6
Bowler	76.4	Lyman	354.2
Lookout	85.1	Ft. Bridger...	359.8
Harper	90.6	Evanston	395.2
Rock River	96.8	Wyuta Station...	398.2
Medicine Bow...	116.8	Wasatch	405.1
Carbon	127.0	Castle Rock...	413.4
Evanville	135.3	Emory Station...	420.3
Hanna	138.5	Main Forks...	429.3
Walcott	155.5	Coalville	441.2
Ft. Steele...	163.1	Hoytsville...	444.3
Lakota	169.6	Wanship	449.1
Granville	173.4	Kimball's Ranch...	459.1
Rawlins	178.7	Ranch's Ranch...	460.2
Creston Station...	208.2	Salt Lake City...	483.5

SALT LAKE CITY-ELY.

Miles		Miles	
Salt Lake City...	0.0	Orr's Ranch...	87.3
Pleasant Green...	15.0	County Well...	104.2
Ragtown	16.1	Fish Springs...	146.2
Garfield	20.3	Callao	166.6
Lake Point...	28.1	Ibapah	192.2
Milltown	30.3	Tippett	215.8
Grantsville	40.3	Anderson's R'h...	237.3
Timpale Point...	54.3	Shellbourne...	244.9
Isopah	70.2	Magnuson's R'h...	264.9
Brown's Ranch...	77.3	McGill	273.6
Indian Ranch...	79.3	East Ely	285.4
Indian Farm...	84.3	Ely	288.4

ELY-RENO.

Miles		Miles	
Ely	0.0	Austin Summit...	151.9
Lane	2.4	Austin	154.0
Copper Flat...	6.9	New Pass Can-	
Relpetown	8.0	yon	181.5
Kimberly	8.7	Alpine Ranch...	190.7
Jake's Summit...	16.2	Eastgate	214.3
Mooreman's R'h...	30.7	Westgate	224.1
Rosevear's R'h...	32.7	Mountain Well...	249.3
White Pine	38.7	Stillwater	264.2
Summit	44.2	Fallon	278.7
Hamilton	50.0	Hazen	295.6
Six Mile House...	60.8	Fernley	308.1
14 Mile House...	68.8	Wadsworth...	311.3
Pinto House...	76.4	Derby	316.8
Eureka	83.6	Vista Station...	338.6
Rigley Ranch...	96.9	Sparks	343.8
Grimes' Ranch...	124.9	Reno	347.8

RENO-SAN FRANCISCO.

Miles		Miles	
Reno	0.0	Roseville	122.0
Verdi	10.7	Sacramento...	139.7
Truckee	32.7	Elk Grove...	152.7
Donner	37.7	McConnell	157.7
Emigrant Gap...	62.7	Arno	159.7
Dutch Flat or...	75.8	Galt	165.7
Alta	79.0	Woodbridge...	173.7
Gold Run	89.0	Stockton	187.7
Colfax	92.2	French Camp...	192.8
Wyman	95.0	Banta	204.4
Applegate	104.5	Altamont	221.9
Auburn	109.3	Tracy	208.1
New Castle...	112.6	Livermore...	229.7
Penryn	114.4	Hayward	257.2
Loomis	117.0	Oakland	263.9
Rocklin		San Francisco...	267.9

RENO-SACRAMENTO.

Miles		Miles	
Reno	0.0	Sportsman's...	
Steamboat Spgs...	10.1	Hall	106.6
Washoe	15.1	Camino	110.9
Franktown	20.1	Placerville...	117.6
Carson City...	31.7	Eldorado	125.0
Glenbrook	47.1	Shingle Springs...	129.9
Cave Rock	50.1	Clarksville...	137.5
Edgewood	56.7	White Rock...	141.0
Lakeside Park...	57.8	Folsom	147.1
Meyers	65.7	Natomas	148.3
Sierra Nevada...	68.9	Mills	157.1
Summit	71.4	Mayhew	160.0
Phillips	76.1	Manlove	161.1
Strawberry	85.8	Perkins	163.2
Kyburz	95.3	Sacramento...	168.4
Riverfront			



ENCIRCLING the great State of Michigan and tapping the rich industrial centers of Illinois, Indiana and Ohio, and passing southward to Florida, where it terminates at Miami after traversing the winter resorts of that state, the Dixie Highway is second only to the great transcontinental lanes. The total mileage of the Dixie Highway, with all its divisions and branches, is 5221 miles, traversing 171 counties of eight states.

Its main branches extend from Chicago and South Bend via Indianapolis, Louisville, Chattanooga, Atlanta and Jacksonville to Miami, and from Detroit via Toledo, Cincinnati, Lexington and Knoxville to Chattanooga, where the two divisions come together.

Branches of the Dixie Highway are crossed by the Lincoln Highway at Lima, O.; South Bend, Ind., and Chicago Heights, Ill. Throughout its entire length the highway system is backed and encouraged by an enthusiastic organization which has been responsible for its high state of development and progress.

Motor tourists and prospective tourists of northern states have been in the habit of looking longingly at Florida as the touring season rolled around, wondering when it would be possible to drive to the land of flowers with some degree of comfort. When the Dixie Highway movement was organized four years ago with the fan flare of trumpets attending the conference of governors of northern and southern states, motorists began to believe that they would soon have a great highway to the object of their desire. As each year rolled by and the more venturesome tourists came back, mostly by rail instead of impossible trails, they began to believe that the great projected highway between the North and South had been paved by its promoters, the Dixie Highway Association, with good intentions instead of the

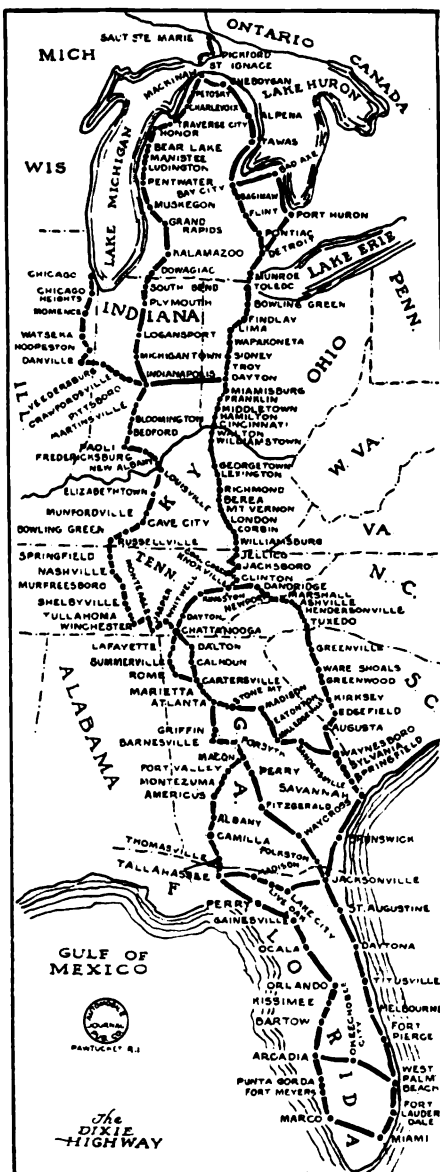
more durable surfacing of concrete, brick or even macadam.

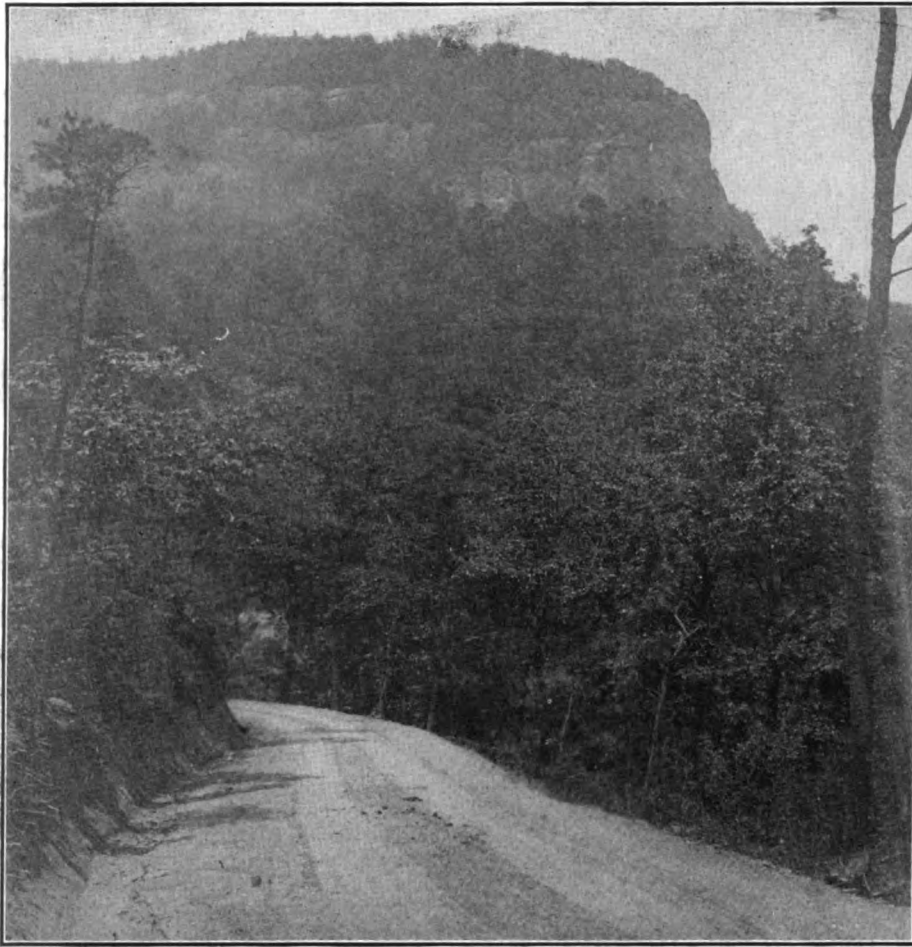
The Dixie Highway Association, be it known, has been working persistently in the mud and rocks of the Cumberland Mountains and the sands of southern Georgia and northern Florida and now comes forward with a definite promise to dedicate the eastern division of the highway from Cincinnati to Chattanooga via Lexington and Knoxville, on June 14, 1920. All of the financial arrangements for the construction of the remainder of 126 miles of the highway through the Cumberland mountains have been completed. Forces are at work in five of the counties and expect to complete a surfaced highway from Cincinnati to Knoxville within less than 12 months. When this is done one of the most picturesque routes in the United States will be open for tourist travel.

During the present summer touring season it will be possible for motorists to travel this division of the highway to Berea, Kentucky, in the foot hills of the Cumberlands, over a surfaced highway through the beautiful Blue Grass country of Kentucky. Berea is mentioned in this connection as it is a worth while objective, being the seat of Berea College, famous throughout the United States for the vocational training which it has given thousands of boys and girls of the mountains. Boone Tavern, conducted by the students of the college, offers excellent hotel accommodations. The many splendid college buildings, built by the students, which comfortably take care of more than 4000 students each year, the museum of relics and curios of the mountain people, are sufficient reward for the day or day and a half ride from Cincinnati.

Crossing Kentucky River.

The city of Lexington, the metropolis and social center of the justly famed Blue Grass country, the picturesque





Scene in Mountains of North Carolina Near Hendersonville, Recently Adopted as Part of the Dixie Highway.

crossing of the Kentucky river, will tempt the average tourist to tarry a while along the way to Berea. It will hardly be advisable to go farther south along the eastern division until next summer, when the road will be formally opened, on account of the construction work going on in the mountains and the difficult detours which will be necessary.

Six cars carrying directors of the Dixie Highway Association and representatives of the Detroit, Cincinnati, Knoxville and Chattanooga Automobile Clubs made a trip of inspection over this division, leaving Cincinnati on June 23. In the party were Carl G. Fisher, Indianapolis, father of the Dixie Highway movement; Judge M. M. Allison, Chattanooga, president of the Dixie Highway Association; Harry L. Gordon, John L. Shuff of Cincinnati, A. F. Sanford, publisher of the Journal-Tribune, Knoxville, Tenn.; Col. Milton B. Ochs, publisher Chattanooga Times; W. T. Anderson, publisher Macon Telegraph, Macon, Ga.; A. G. Batchelder, chairman, executive board of the American Automobile Association, Washington, D. C.; Rodman Wiley, commissioner of public roads of Kentucky, and Secretary V. D. L. Robinson, Chattanooga, of the Dixie Highway Association.

The Dixie Highway Association has been likewise successful in making financial provisions for the completion of the western division of the highway between Nashville and Chattanooga, and within 12 months a surfaced road over this route

is assured. The absence of a highway over Cumberland mountains has blocked the way of tourists to and from Florida for years, as it is one of the two logical outlets through the Cumberlands between the north central states and the southeast. Seventy per cent. of the con-

struction of an entirely new road between the two Tennessee cities was secured prior to the war, when the work was halted.

With the passage of a new road act and the appointment of a new state highway commission, the association continued to fight. A meeting was held in Nashville, June 6 at which agreements were reached with all the counties from Nashville to Monteagle, on top of Cumberland mountain, leaving only one county unprovided for. Chairman W. W. House and State Highway Engineer W. P. Moore made a tour of inspection over the highway, leaving Chattanooga June 17. The way has been paved for an agreement with Marion county which will result in the state taking over the completion of the entire highway. They confidently expect to do this within 12 months.

Although arrangements have only been made for the dedication of the eastern division next year, it is believed that plans can be made to dedicate the western division shortly after.

Permanent Improvements.

Definite provisions have been made in Michigan, Ohio, Illinois and Florida to pave the entire mileage of the highway through these states. Ohio will almost, if not entirely so, complete the paving of the highway between Detroit and Cincinnati this year.

Illinois and Michigan will pave the Dixie Highway just as rapidly as it can be done, as in both states the Dixie Highway has priority over other through roads. Provision has been made for the paving of 25 per cent. of the highway in the State of Georgia, by county bond issues and Federal aid. Other counties in this state are falling in line with similar bond issues. With the passage of the \$40,000,000 bond issue in that state the permanent improvement of the entire mileage from the Tennessee to the Flor-



Road Up Lookout Mountain Near Chattanooga.

ida line will be assured. Florida will vote a state bond issue during the present Legislature to provide the additional funds to connect the mileage of paving now existing along the highway in that state. Indiana will construct a considerable mileage of the highway of concrete or brick this year and next under the county unit bond issue plan adopted by the Legislature of 1919.

Cincinnati-Knoxville.

By way of location the Dixie Highway from Detroit to Mt. Vernon, Kentucky on the eastern division is open for all year round travel. Between Mt. Vernon and Livingston forces are constructing the last mile of road into the town of Livingston. From this point to the Rockcastle river, a distance of seven miles, a contract has been awarded for the grading. Contributions to the amount of \$20,000 were secured between Detroit and Chattanooga to be used with Federal, state and county aid, making a total of \$90,000 for this work. In Laurel county, from the Rockcastle river to Corbin, the highway has been graded and all but 13 miles of the surfacing completed. Commissioner Rodman Wiley of Kentucky has given the counties of Rockcastle and Laurel assurances that they will receive 50 per cent. Federal aid and 25 per cent. of state aid for the surfacing of the 20 miles in the two counties. At an estimate of \$5000 per mile, it will require these counties to raise only \$25,000 for this work.

Between Corbin and Knoxville.

During the war period state convicts were at work repairing the highway from Corbin to Williamsburg in Whitley county, a distance of approximately 12 miles. It now can be traveled all the year round. The convicts were also used in grading and putting in drainage from Williamsburg to Saxton, a distance of approximately six miles, and in the construction of the abutments for the steel bridge at Saxton. There remains only three and a half miles of the highway to grade to the Tennessee line. The state convicts have again been put to work on this section. The county has available \$53,000, which, with the Federal aid and state aid totaling \$163,000, is considered ample to complete a well surfaced road, and the bridge at Saxton, through the county. The work will be pushed as rapidly as the construction can be done.

Campbell county, Tennessee, was one of the few counties which was able to carry on road construction work during the latter part of 1918. All of the grading has been completed and a part of the surfacing from Jellico on the Kentucky-Tennessee line to La Follette, where the surfaced road to Knoxville is encountered. The contract for a large part of the remaining surfacing has been awarded and work is under way. The county had \$100,000 on Jan. 1 to complete the work. It was promised \$25,000 of state aid and additional Federal aid by the old Tennessee Highway Commission. Even if the county should not obtain this Federal and state aid from the new commission, it is possible for the county to complete the surfacing. From



Savannah's Moss Hung Oaks.

Knoxville to Chattanooga a surfaced road is now provided.

Provisions for Highway.

The rapidity with which Dixie Highway counties in Georgia are following each other in the issuance of bonds in accounts from \$100,000 to \$700,000 indicates that no difficulty may be expected regarding the completion of the Dixie Highway in that state, with a large part of the mileage paved with concrete. Five Dixie Highway counties have voted \$2,200,000 in bonds and six more have called elections to be held this month for bonds amounting to \$2,287,000. From reports received by the association from additional counties, which have not yet determined on the amount or the date of election, this amount will be increased by another \$2,000,000. This does not take into consideration the Federal aid which will be spent in these counties or the passage of the \$40,000,000 bond issue which will be voted upon by the Legislature in July. Bonds have been voted or elections called in the state for a total of \$11,000,000, which will probably be increased to at least \$15,000,000 by July 1.

Rome Route to Atlanta.

Between Chattanooga and Atlanta it is reasonable to expect that the Rome route will be paved for a large part of the distance and will be a hard surfaced road by fall of this year. Just what is done on the Dalton route will depend on Whitfield and Gordon counties. Floyd county is planning a large bond issue to pave the highway through the county. Bartow county, in view of the preparations on the Rome route, has announced

that the highway from the Floyd county line through Cartersville to the Cobb county line will be first improved under the \$400,000 bond issue. Cobb county votes on a bond issue, the amount to be determined, to connect the paving of Bartow county with that of Fulton county.

Atlanta to Macon Road.

Between Atlanta and Macon two of the four counties outside of Fulton which will pave her part of the mileage of the Dixie Highway this year have voted bonds to surface their part with concrete. Spalding county, of which Griffin is the county seat, voted \$350,000 in bonds. Before the bonds were voted this county advertised for bids on six miles of 18-foot concrete road along the Dixie Highway toward Atlanta out of a separate fund. Bibb county, of which Macon is the county seat, has voted \$700,000 in bonds for the paving of the Dixie Highway and other roads. It is believed that two remaining counties will fall in line, giving a boulevard between the two Georgia cities.

Sand Roadway Eliminated.

Between Macon and Jacksonville, on the central division, Charlton county, of which Folkston is the county seat on the banks of the St. Mary's river, which is known by every tourist who has attempted to go to Florida for its mileage of almost impassable sand, was the first county to vote bonds on this division. This county, which is the largest and at the same time has the lowest assessed valuation in the State of Georgia, has voted its limit of \$75,000 in bonds which will be increased by \$25,000, which Miami and Jacksonville automobile clubs have



Dixie Highway Near Richmond, Ky.

agreed to assist in raising, practically all of which with Federal aid will be used in building the Dixie Highway through the county. Ware county, which is separated from Charlton by only six miles of the highway in Pierce county, voted last month on \$630,000 to pave the Dixie Highway. Pulaski county, of which Hawkinsville is the county seat, has voted \$200,000 and Ben Hill, with Fitzgerald, its county seat, has also voted on \$157,000 in bonds. The difficult stretch at the present time is in Ware, Pierce and Charlton counties.

Nassau county, Florida, has likewise solved its difficulty of getting rid of the sand on this division into Jacksonville.

ITINERARY.

THE DIXIE HIGHWAY.

Night Stops — Chicago, Indianapolis, Louisville, Ky.; Nashville, Chattanooga, Atlanta, Macon, Jacksonville, Miami, Gainesville, Tallahassee, Macon, Knoxville, Cincinnati, Toledo, Detroit, Traras City, Mackinaw, Muskegon, South Bend.

Chicago-Danville, Ill.

Miles	Miles
Chicago	Watseka
Chicago H'ghts 28.8	Hoopston
Momence	Danville

Danville, Ill.-Indianapolis, Ind.

Miles	Miles
Danville	Brownburg
Covington, Ind. 12.8	Indianapolis

Indianapolis-Dayton, O.

Miles	Miles
Indianapolis	Eaton, O.
Knightstown	Dayton
Richmond, Ind. 68.8	

Indianapolis-Louisville, Ky.

Miles	Miles
Indianapolis	Bedford
Martinsville	Paoli
Bloomington	Louisville

Louisville-Nashville, Tenn.

Miles	Miles
Louisville	Cave City
Elizabethtown	Russellville
Mumfordsville	Nashville

Nashville-Chattanooga.

Miles	Miles
Nashville	Pelham
Laverne	Tracy City
Murfreesboro	Sequentchle
Beach Grove	Jasper
Manchester	St. Elmo
Hillsboro	Chattanooga

Chattanooga-Atlanta, Ga.

Miles	Miles
Chattanooga	Marietta
Summerville	Atlanta
Rome	

Atlanta-Milledgeville.

Miles	Miles
Atlanta	Madison
Decatur	Eatonton
Stone Mountain 16.6	Milledgeville

Atlanta-Macon, Ga.

Miles	Miles
Atlanta	Forsyth
Griffin	Macon

Macon-Jacksonville, Fla.

Miles	Miles
Macon	Waycross
Perry	Jacksonville
Fitzgerald	

Jacksonville-Miami, Fla.

Miles	Miles
Jacksonville	Melbourne
St. Augustine	Fort Pierce
Hastings	W. P'm Beach
Dayton	F. Lauderdale
Titusville	Miami

Miami-Jupiter, Fla.

Miles	Miles
Miami	W. P'm Beach
F. Lauderdale	Jupiter

Jupiter-Arcadia, Fla.

Miles	Miles
Jupiter	Arcadia
Okeechobee	

Arcadia-Gainesville, Fla.

Miles	Miles
Arcadia	Leesburg
Bartow	Ocala
Orlando	Gainesville

Gainesville-Tallahassee.

Miles	Miles
Gainesville	Perry
Newberry	Simmons
Trenton	Lamont
Mayo	Tallahassee

Tallahassee-Jacksonville.

Miles	Miles
Tallahassee	Live Oak
Monticello	Lake City
Madison	Jacksonville

Tallahassee-Macon, Ga.

Miles	Miles
Tallahassee	Americus
Thomasville	Ft. Valley
Camilla	Macon
Albany	

Macon-Atlanta, Ga.

Miles	Miles
Macon	Griffin
Forsyth	Atlanta

Atlanta-Chattanooga, Tenn.

Miles	Miles
Atlanta	Dalton
Cartersville	Chattanooga

Chattanooga-Knoxville, Tenn.

Miles	Miles
Chattanooga	Kingston
Dayton	Knoxville

Knoxville-Cincinnati, O.

Miles	Miles
Knoxville	Berea
Cumberland Gap	Richmond
Middlesboro	Lexington
Barboursville	Georgetown
Corbin	Williamstown
London	Covington
Mt. Vernon	Cincinnati

Cincinnati-Toledo, O.

Miles	Miles
Cincinnati	Sidney
Middletown	Lima
Dayton	Findley
Troy	Bowling Green
Piqua	Toledo

Toledo-Detroit, Mich.

Miles	Miles
Toledo	Old Port
La Salle	Wyandotte
Monroe	Detroit

Detroit-Mackinaw, Mich.

Miles	Miles
Detroit	Alpena
Flint	Onaway
Bay City	Mackinaw
Taras City	

Mackinaw-South Bend, Ind.

Miles	Miles
Mackinaw	Grand Haven
Petosky	Grand Rapids
Traverse City	Kalamazoo
Manistee	South Bend
Muskegon	

South Bend-Indianapolis, Ind.

Miles	Miles
South Bend	Logansport
Plymouth	Indianapolis
(Cross route from Macon, Ga., to Jacksonville, Fla., via Savannah, Ga.)	

Macon, Ga.-Jacksonville, Fla.

Miles	Miles
Macon	Savannah
Milledgeville	Riceboro
Waynesboro	Brunswick
Springfield	Jacksonville



In Heart of Cumberlands.



Crossing a Stream.



Medicine Lake, with Mt. Rockwell in Background, Glacier National Park.

TO BUILD a railroad, reclaim lands, give new impulse to enterprise and offer new doors to ambitious capital—these are phases of the ever widening life and activity of this nation. The United States, however, does more; it furnishes playgrounds to the people which are without any rivals in the world. Just as the cities are seeing the wisdom and necessity of open spaces for the children, so with a very large view the nation has been saving from its domain the rarest places of grandeur and beauty for the enjoyment of the world.

This nation is richer in natural scenery of the first order than any other nation; but it does not know it. It possesses an empire of grandeur and beauty which it scarcely has heard of. It owns the most inspiring playgrounds and best equipped nature schools in the world and is serenely ignorant of the fact.

Individual features of several of our national parks are known the world over; but few to whom the Yosemite Valley is a household word know that its seven wonderful miles are

a part of a scenic wonderland of 1100 square miles, called the Yosemite National Park. So with the Yellowstone; all have heard of its geysers, but few indeed of its 3300 square miles of wilderness beauty.

Land of Wonders.

The Yellowstone National Park is the largest and most widely celebrated of our national parks. It is a wooded wilderness. It contains more geysers than are found in the rest of the world together. It has innumerable boiling springs whose steam mingles with the

clouds.

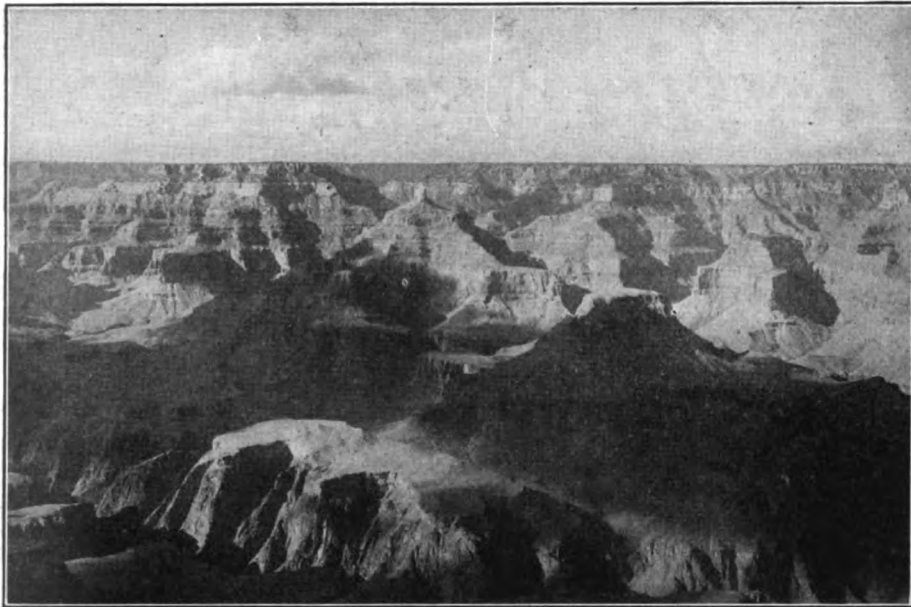
It has many rushing rivers and large lakes. It has waterfalls of great height and large volume. It has fishing waters unexcelled. It has canyons of sublimity, one of which presents a spectacle of broken color unequalled. It has areas of petrified forests with trunks standing. It has innumerable wild animals which have ceased unduly to fear man; in fact, it is unique as a bird and animal sanctuary.

It has great hotels and many public camps. It has 200 miles of excellent roads. It is an ideal summer school of nature study.

The Yellowstone is associated in the public mind with geysers only. Thousands even of those who, watches in hand, have hustled from sight to sight over the usual stage schedules, bring home vivid impressions of little else. There never was a greater mistake. Were there no geysers, the Yellowstone watershed alone, with its glowing canyon, would be worth the national park. Were there also no canyon, the scenic wilderness



Camping in the Pines in Glacier National Park.



Gathering Shadows, Grand Canyon, Arizona.

and its incomparable wealth of wild animal life would be worth the national park.

The personality of the Yellowstone is threefold. The hot water manifestations are worth minute examination, the canyon a contemplative visit, the park a summer. Dunraven Pass, Mount Washburn, the canyon at Tower Falls, Shoshone Lake, Sylvan Pass—these are known to very few indeed.

Many-Colored Canyon.

From Inspiration Point, looking 1000 feet almost vertically down upon the foaming Yellowstone river, and southward three miles to the Great Falls, the hushed observer sees spread before him the most glorious kaleidoscope of color he will ever see in nature. The steep slopes are inconceivably carved by the frost and the erosion of the ages. Sometimes they lie in straight lines at easy angles, from which jut high rocky prominences. Sometimes they seem carved from the side walls. Here and there jagged rocky needles rise perpendicularly like groups of gothic spires.

And the whole is colored as brokenly and vividly as the field of a kaleidoscope. The whole is streaked and spotted and stratified in every shade from the deepest orange to the faintest lemon, from deep crimson through all the brick shades to the softest pink, from black through all the grays and pearls to glistening white. The greens are furnished by the dark pines above, the lighter shades of growth caught here and there

in soft masses on the gentler slopes and the foaming green of the plunging river so far below. The blues, ever changing, are found in the dome of the sky overhead.

Great Animal Refuge.

The Yellowstone National Park is by far the largest and most successful wild animal preserve in the world. Since it was established in 1872 hunting has been strictly prohibited, and elk, bear, deer of several kinds, antelope, bison, moose and bighorn mountain sheep roam the plains and mountains in large numbers. Thirty thousand elk, for instance, live in the park. Antelope, nearly extinct elsewhere, here abound.

The animals have long since to fear man as wild animals do everywhere except in our national parks. While few tourists see them who follow the beaten roads in the everlasting sequence of stages, those who linger in the glorious wilderness see them in an abundance that fairly astonishes.

The park has entrances on all four sides. Three have railroad connections; the southern entrance, by way of Jackson's Hole and past the jagged snowy Tetons, is available for vehicles. The roads from all entrances enter a central belt road which makes a large circuit connecting places of special interest. Five large hotels are located at points convenient for seeing the sights, and are supplemented by a dozen or more public camps at modest prices.

Who does not know of the Yosemite

Valley? And yet, how few have heard of the Yosemite National Park?

The first view of most spots of unusual celebrity often falls short of expectation, but this is seldom, if ever, true of the Yosemite Valley. The sheer immensity of the precipices on either side of the peaceful floor; the loftiness and the romantic suggestion of the numerous waterfalls; the majesty of the granite walls and the unreal, almost fairy quality of the ever-varying whole cannot be successfully foretold.

The Yosemite Falls drop 1430 feet in one sheer fall, a height equal to nine Niagara Falls piled one on top of the other. The Lower Yosemite Fall, immediately below, has a drop of 320 feet, or two Niagaras more. Vernal Falls has the same height. The Nevada Falls drops 594 feet sheer and the celebrated Bridalveil Falls 620 feet. Nowhere else in the world may be had a water spectacle such as this.

Summer in the Yosemite is unreal. The valley, with its foaming falls dissolving into mists, its calm forests hiding the singing river, its enormous granite peaks and domes against the sky, its inspiring silence haunted by distant water, suggests a dream. One has a sense of fairyland and the awe of infinity.

Imagine Cathedral Rocks rising 2600 feet above the wild flowers, El Capitan 3600 feet, Sentinel Dome 4000 feet, Half Dome 5000 feet and Cloud's Rest 6000 feet! And among them the waterfalls!

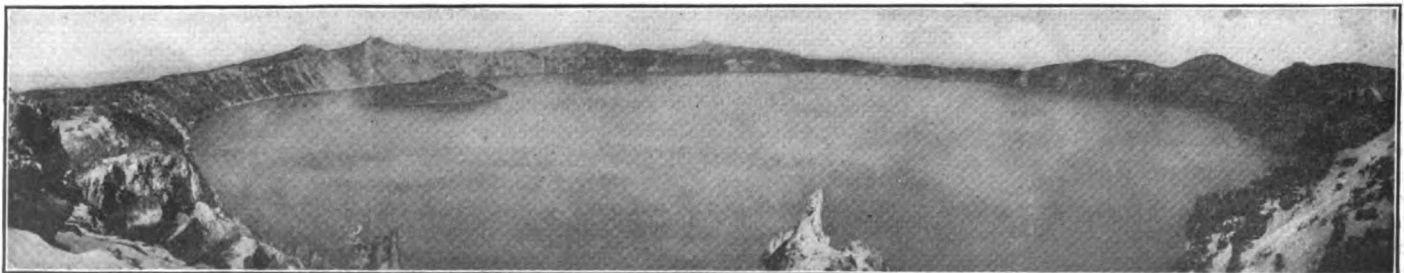
Even the weather appears impossible; the summers are warm, but not too warm; dry, but not too dry; the nights cool and marvelously starry.

A few miles away are the Big Trees, not the greatest groves nor the greatest trees, for those are in the Sequoia National Park, 100 miles south, but these groves containing monsters which, next to Sequoia's, are the hugest and the oldest living things. Of these the Grizzly Giant is king—whose diameter is nearly 30 feet, whose girth is more than 200. Their presence commands the silence due to worship.

Living is comfortable in the Yosemite. Four roomy public camps, two excellent hotels and several new lodges offer the visitor a choice of kind and price. New hotels are building to replace the old. The Yosemite is an excellent place to camp out.

Tioga Road.

Above the north rim of the valley the old Tioga Road, which the Department of the Interior acquired in 1915 and put into good condition, crosses the park



Crater Lake as Seen from Garfield Peak Crater National Park.

from east to west, affording a new route across the Sierra and opening to the public for the first time the magnificent scenic region in the north.

Before the road pointed the way to the magnificent mountain the valley area constituting the northern half of the Yosemite National Park, this pleasure paradise was known to none except a few enthusiasts who penetrated its wilderness year after year with camping outfits. This is the region of rivers and lakes and granite domes and brilliantly polished glacial pavements.

From the base of the Sierra crest, born of its snows, the Tuolumne River rushes westward, roughly paralleling the Tioga Road. Midway it slants sharply down into the Tuolumne Canyon, forming in its mad course a water spectacle destined some day to world fame.

Nature's forest masterpiece is John Muir's designation of the giant tree after which is named the Sequoia National Park in middle eastern California. Here within an area of 237 square miles are found several large groves of the celebrated *Sequoia gigantea*, popularly known as the Big Tree of California. More than a million of these trees grow within the park's narrow confines, many of them mere babes of a few hundred years, many sturdy youths of a thousand years, many in the young vigor of two or three thousand years, and a few in full maturity. The principal entrance is Visalia, Cal.

Half a dozen miles away is the General Grant National Park, whose four square miles were set apart because they contained the General Grant Tree, second only in size and age to the patriarch of all, the General Sherman Tree. On Sequoia's favored slopes grow other monsters also. It is the park of big trees of many kinds and it is the park of birds.

The Sequoia National Park is the gateway to one of the grandest scenic areas in this or any other land. Over its borders to the north and east lies a land of sublime mobility whose wild rivers and tortuous canyons, whose glacier carved precipices and vast snowy summits culminating in the supreme altitude of Whitney, will make it some day surpassed in celebrity by none.

Mount Rainier.

From the Cascade Mountains in Washington rises a series of volcanoes which once blazed across the sea like giant beacons. Today, their fires quenched, they suggest a stalwart band of Knights of Ages, helmeted in snow, armored in

ice, standing at parade under a carpet patterned gorgeously in wild flowers.

Easily chief of this knightly band is Mount Rainier, a giant towering 14,408 feet above tidewater in Puget Sound. Home-bound sailors far at sea mend their courses from his silver summit.

This mountain has a glacier system far exceeding in size and impressive beauty that of any other in the United States. From its snow-covered summit 28 rivers of ice pour slowly down its sides. Seen upon the map, as if from an aeroplane, one thinks of it as an enormous frozen octopus stretching icy tentacles down upon every side among the

patches of pine green and snow white—a gem which changes hue with every atmospheric change and every shift of light.

Mesa Verde.

Mesa Verde National Park is in the extreme southwestern corner of Colorado and is reached by two routes from Denver. A night is usually spent en route, and the ruins are reached by wagon, horseback or automobile from Mancos. Apart from the ruins the country is one of much beauty and interest.

The views are inspiring the entire country "different." In the spring the entire region blooms. It used to be a country of wild animals and at times deer are still plentiful. There is a thoroughly comfortable hotel near Spruce Tree House.

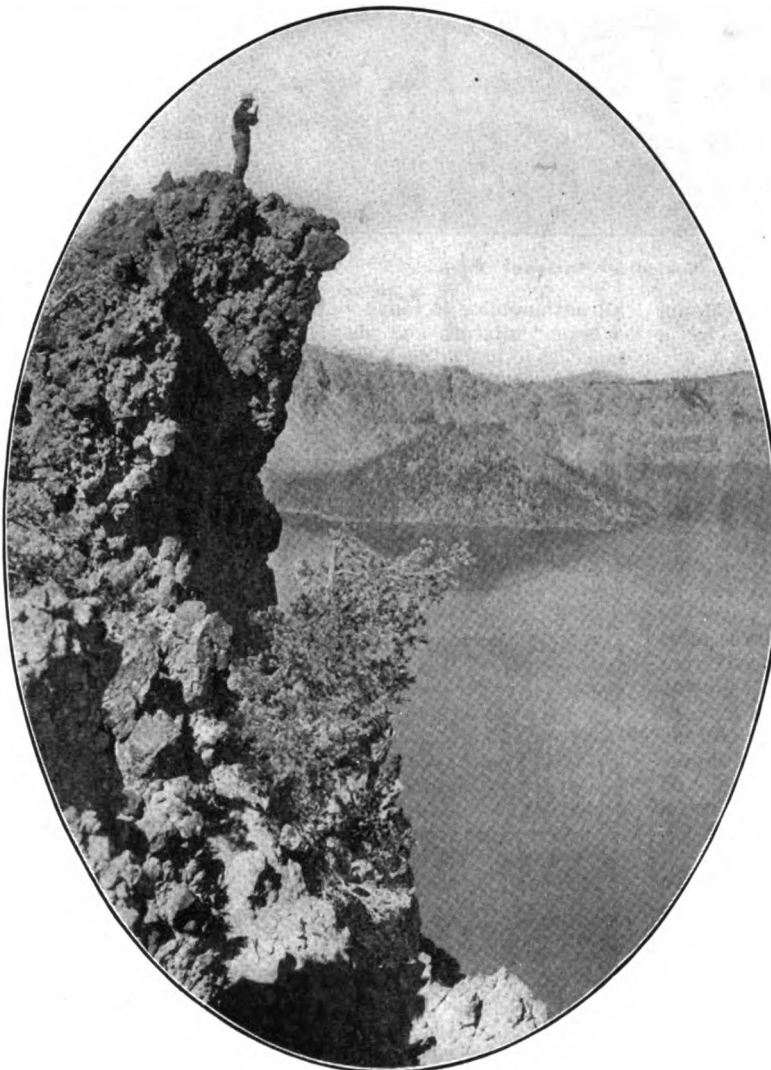
Notwithstanding the 60 glaciers from which it derives its name, the Glacier National Park is chiefly remarkable for its picturesquely modeled peaks, the unique quality of its mountain masses, its gigantic precipices and the romantic loveliness of its 250 lakes. Though most of our national parks possess similar general features in addition to those which sharply differentiate each from every other, the Glacier National Park shows them in special abundance and unusually happy combination. In fact, it is the quite extraordinary, almost sensational, massing of these scenic elements which gives it its marked individuality.

The Glacier National Park lies in northwestern Montana, abutting the Canadian boundary. It encloses the continental divide of the Rocky Mountains at that point; in fact, from one spot known as the Triple Divide, where waters flow into the Pacific Ocean, Hudson Bay and the Gulf of Mexico.

For many years the mecca of eastern mountain lovers has been the Rockies.

For many years the name has summed European ideas of American mountain grandeur. Yet it was not until 1915 that a particular section of the enormous area of magnificent and diversified scenic range thus designated was chosen as the representative of the noblest qualities of the whole. This is the Rocky Mountain National Park.

And it is splendidly representative. In nobility, in calm dignity, in the sheer glory of stalwart beauty, there is no mountain group to excel the company of snow-capped veterans of all the ages which stands at everlasting parade behind its grim, helmeted captain, Longs Peak.



Wizard Island from Garfield Peak in Crater Lake National Park.

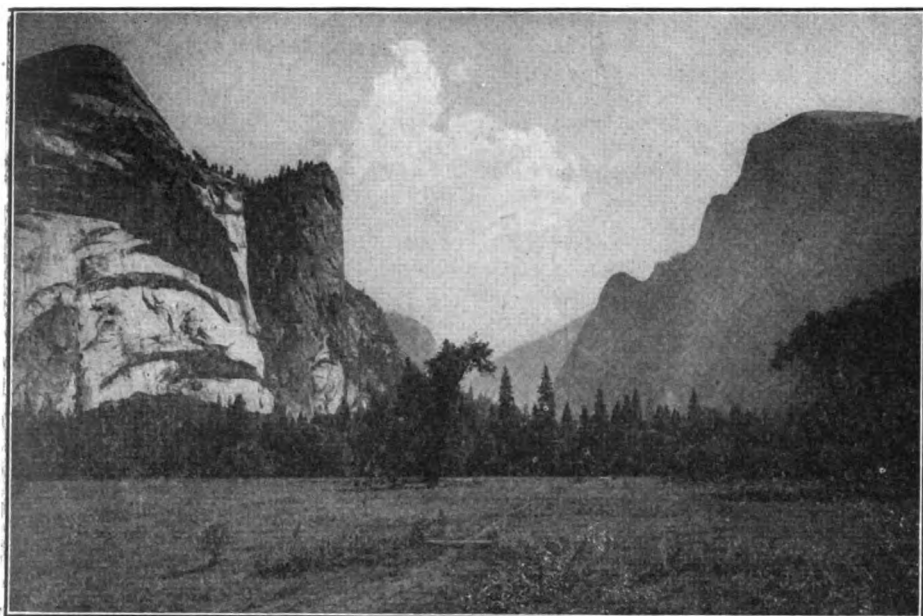
rich gardens of wild flowers and splendid forests of firs and cedars below.

The park is easily accessible. An excellent road will carry the visitor by auto.

Crater Lake.

Crater Lake is the deepest and the bluest lake in the world. It measures 2000 feet of solid water and the intensity of its color is unbelievable even while you look at it. Its cliffs from sky line to surface are 1000 feet high. It has no inlet and no visible outlet, for it occupies the hole left when in the dim ages before man a volcano collapsed and disappeared within itself.

It is a gem of wonderful color and a setting of pearly lavas relieved by



The Domes in Yosemite National Park.

The accessibility of the Rocky Mountain National Park is apparent by a glance at any map.

Grand Canyon.

"More mysterious in its depth than the Himalayas in their height," writes Prof. John C. Van Dyke, "the Grand Canyon remains not the eighth, but the first wonder of the world. There is nothing like it."

Even the most superficial description of this enormous spectacle may not be put in words. The wanderer upon the rim overlooks a thousand square miles of pyramids and minarets carved from the painted depths. Many miles away and more than a mile below the level of his feet he sees a tiny silver thread which he knows is the giant Colorado.

He is numbed by the spectacle. At first he cannot comprehend it. There is no measure, nothing which the eye can grasp, the mind fathom.

It may be hours before he can even slightly adjust himself to the titanic spectacle, before it ceases to be utter chaos; and not until then does he begin to exclaim in rapture.

Permits for Autos.

The National Parks are located as follows: Hot Springs Reservation, middle Arkansas; Yellowstone, northwestern Wyoming; Yosemite, middle eastern California; Sequoia, middle eastern California; General Grant, middle eastern California; Mount Rainier, west central Washington; Crater Lake, southwestern Oregon; Mesa Verde, southwestern Colorado; Platt, southern Oklahoma; Glacier, northwestern Montana; Rocky Mountain, north middle Colorado. National parks of less popular interest are: Sully's Hill, North Dakota; Wind Cave, South Dakota; Casa Grande Ruin, Arizona.

Fees for automobile and motorcycle permits for Yellowstone Park are \$7.50 and \$2.50 respectively and are good for the entire season, expiring Dec. 31. Due to the high altitude of the park roads, averaging nearly 7000 feet, the power of

all automobiles is much reduced, so that a leaner mixture and about 50 per cent. more gasoline is required than at lower altitudes. Likewise, one lower gear will generally have to be used on grades than would be necessary elsewhere. A further effect that must be watched is the heating of the engine on long grades, which may become serious unless care is used. A copy of the regulations should be secured when one is about to enter any of the national parks.

The Yellowstone Trail is one of the most convenient for New Englanders and residents of New York state and the lake states to use in reaching the national parks.

A tour over the Yellowstone Trail affords the motorist an exceptionally instructive trip as he passes from Plymouth, Mass., where the Mayflower land-

ed with its sturdy band of settlers, across the country through the densely populated sections into the vast wheat fields of Minnesota and the Dakotas into the western mining country and territory where many of the scenic wonders of the world are found in several of our great national parks.

The great impression among motorists who have never visited these great recreation grounds is that they are vast stretches of wilderness, whereby they are really ideal for touring and camping trips.

ITINERARY. YELLOWSTONE TRAIL.

Night Stops—Plymouth, Mass.; Hartford, Conn.; Poughkeepsie, N. Y.; Binghamton, Olean, Youngstown, O.; Fort Wayne, Ind.; Chicago, Ill.; Milwaukee, Wis.; Minneapolis, Minn.; Millbank, S. D.; Selby, Terry, Mont.; Custer, Livingston, Butte, Missoula, Spokane, Wash.; Walla Walla, Tacoma. Twenty Days, 3946.4 Miles.

Plymouth-Providence.

Miles		Miles	
Plymouth.....	0.0	E. Providence..	42.8
Middleboro.....	14.7	Providence	43.8
Taunton.....	25.8		

Providence-Hartford.

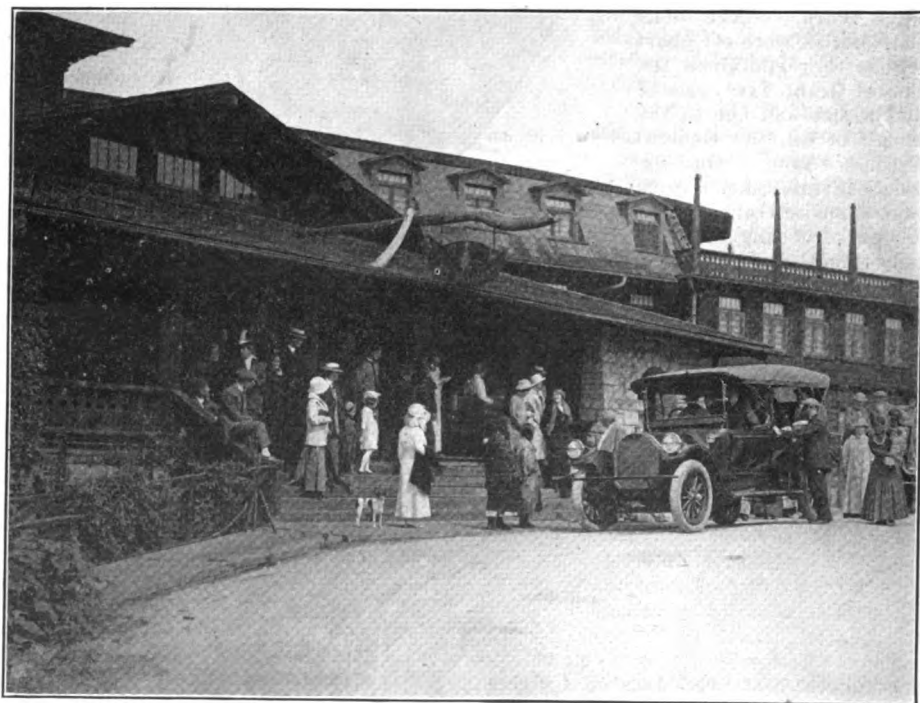
Miles		Miles	
Providence.....	0.0	Willimantic ...	56.0
Chepachet.....	15.4	Andover	65.3
Pomfret.....	32.1	Hartford	84.0

Hartford-Danbury.

Miles		Miles	
Hartford.....	0.0	N. Milford	38.9
Plainville.....	13.8	Brookfield	61.7
Bantam.....	38.2	Danbury	69.0

Danbury-Poughkeepsie, N. Y.

Miles		Miles	
Danbury.....	0.0	Stormville	27.8
Mill Plain.....	3.9	Fishkill P.....	34.1
Brewster, N. Y.	10.0	N. Hackensack..	37.7
Carmel.....	14.5	Poughkeepsie..	45.1



Grand Canyon—Grand View Auto Party Leaving El Tovar.

**Poughkeepsie-Kingston, N. Y.**

Miles	Miles
Poughkeepsie... 0.0	Rhinecliff... 18.5
Hyde Park... 6.1	Rondout F... 18.6
Rhinebeck... 16.2	Kingston... 22.0

Kingston-Binghamton.

Miles	Miles
Kingston... 0.0	Afton... 126.3
Arkville... 57.8	Ninevah... 131.6
Delgl... 83.3	Belden... 136.9
Unadilla... 100.9	Sanitary Sps... 142.6
Bainbridge... 120.4	Binghamton... 153.7

Binghamton-Elmira.

Miles	Miles
Binghamton... 0.0	Waverly... 45.0
Owego... 24.3	Lowman... 55.6
Smithboro... 35.2	Elmira... 63.6

Elmira-Salamanca.

Miles	Miles
Elmira... 0.0	Almond... 67.1
Corning... 18.6	Alfred Sta... 70.8
Addison... 30.2	Andover... 79.8
Cameron... 43.2	Bolivar... 101.9
Canisteo... 56.5	Salamanca... 138.2
Hornell... 61.8	

Salamanca, N. Y.-Youngstown, O.

Miles	Miles
Salamanca... 0.0	Mercer... 168.0
Warren... 65.0	Youngstown... 210.0
Franklin... 128.0	

Youngstown-Akron, O.

Miles	Miles
Youngstown... 0.0	Ravenna... 32.6
Edinburg... 25.9	Akron... 50.0

Akron-Ft. Wayne, Ind.

Miles	Miles
Akron... 0.0	Ottawa... 147.8
Oberlin... 46.7	Du Pont... 162.8
Bellevue... 83.0	Paulding... 178.0
Fostoria... 118.8	Ft. Wayne... 218.0

Ft. Wayne-Chicago.

Miles	Miles
Ft. Wayne... 0.0	Valparaiso... 119.2
Columbia City... 20.5	East Chicago... 146.2
Warsaw... 42.9	Hammond... 149.2
Plymouth... 72.5	Chicago... 170.2

Chicago-Milwaukee.

Miles	Miles
Chicago... 0.0	Kenosha... 62.3
Evanston... 13.1	Racine... 73.0
Highland Pk... 26.0	S. Milwaukee... 87.0
Waukegan... 46.5	Milwaukee... 96.4

Milwaukee-Minneapolis.

Miles	Miles
Milwaukee... 0.0	Stanley... 229.0

Fond Du Lac... 62.0	Eau Claire... 259.5
Oshkosh... 81.0	St. Paul... 358.7
Stevens Pt... 140.3	Minneapolis... 368.7

Minneapolis-Milbank.

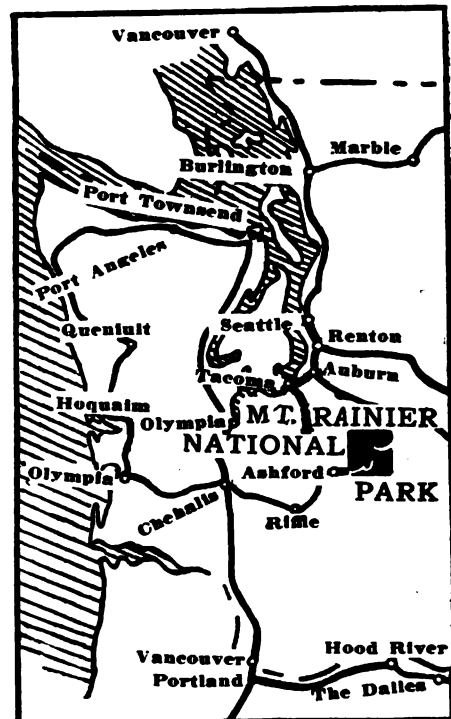
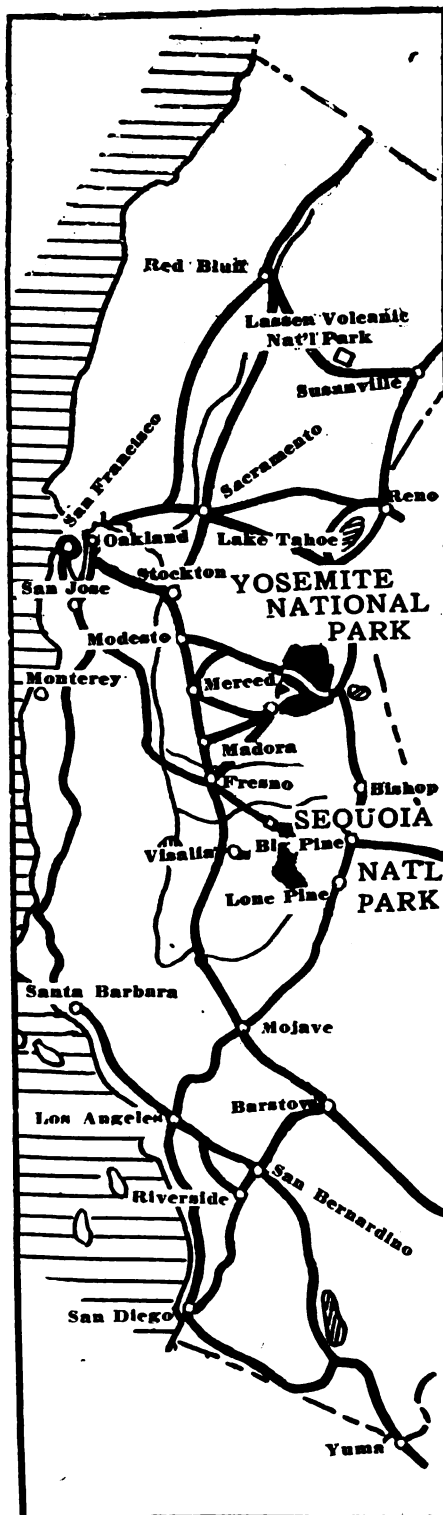
Miles	Miles
Excelsior... 0.0	Sacred Heart... 122.9
Waconia... 31.1	Granite Falls... 131.9
Brownston... 67.9	Ortonville... 205.4
Hector... 86.9	Milbank... 219.9

Milbank-Selby.

Miles	Miles
Milbank... 0.0	Ipawich... 127.0
Webster... 45.0	Bowdle... 157.0
Aberdeen... 97.0	Selby... 180.0

Selby-Hettinger.

Miles	Miles
Selby... 0.0	McIntosh... 110.5
Mobridge... 35.0	Hettinger... 197.5

**Hettinger-Terry.**

Miles	Miles
Hettinger... 0.0	Baker... 158.5
Bowman... 72.0	Terry... 260.5
Martin... 115.5	

Terry-Custer.

Miles	Miles
Terry... 0.0	Forsyth... 90.9
Miles City... 39.3	Custer... 142.6

Custer-Livingston.

Miles	Miles
Custer... 0.0	Reed Point... 124.7
Billings... 57.7	Livingston... 185.5

Livingston-Butte.

Miles	Miles
Livingston... 0.0	Whitehall... 105.1
Bozeman... 26.7	Butte... 139.2
Three Forks... 61.5	

Butte-Drummond.

Miles	Miles
Butte... 0.0	Garrison... 63.8
Anaconda... 25.8	Drummond... 86.6
Deer Lodge... 52.3	

Drummond-Wallace.

Miles	Miles
Drummond... 0.0	Missoula... 58.1
Bearmount... 13.5	Wallace... 181.5

Wallace-Spokane.

Miles	Miles
Wallace... 0.0	Coeur D'Alene... 52.3
Kellogg... 11.6	Spokane... 86.0

Spokane-Walla Walla.

Miles	Miles
Spokane... 0.0	Dayton... 143.5
Colfax... 80.2	Walla Walla... 176.4
Pomeroy... 115.0	

Walla Walla-North Yakima.

Miles	Miles
Walla Walla... 0.0	Prosser... 78.0
Sudbury... 7.0	Grandview... 91.0
Divide... 26.0	Zillah... 111.0
Walla... 29.0	Donald... 120.0
Kennewick... 45.0	Yakima... 127.0
Klona... 63.0	North Yakima... 132.0

North Yakima-Cle Elum.

Miles	Miles
North Yakima... 0.0	Thorp... 53.0
Pomona... 9.0	Teanaway... 65.0
Wenas... 27.0	South Cle Elum... 69.0
Ellensburg... 41.0	Cle Elum... 72.0

Cle Elum-Tacoma.

Miles	Miles
Cle Elum... 0.0	Isaquak... 90.0
Nelson... 16.0	South Park... 109.0
Laconia... 43.0	Seattle... 114.0
Edgewick... 61.0	Christopher... 146.0
Fall City... 79.0	Tacoma... 154.0

PIKES PEAK HIGHWAY

GREAT lines of transportation are not those which connect communities of like interests and resources, but those which make possible the exchange of diversified products and the intermingling of peoples of different environment. An examination of the map of the United States reveals the strategic importance of the Pikes Peak Ocean-to-Ocean Highway as a main trunk line in a system of national highways, whether constructed for social, commercial or military purposes.

It crosses the continent midway between the northern and southern tiers of states, following generally the 40th parallel of latitude. It is a wonderful scenic route and follows historic trails. The logic of its alignment has been demonstrated successively by the Indian, the pioneer and the men who laid out the great railroad lines across the continent.

The Pikes Peak Ocean-to-Ocean Highway has been termed "The Applan Way of America." The name is fitting. The Applan Way of the Roman empire, designed primarily for military purposes, became during the succeeding centuries, a great line of communication for social and commercial purposes.

The highway links 12 states. It passes through six state capitals. It traverses 97 counties and passes through more than 500 hamlets, villages, towns and cities, and it serves in these and adjoining countries a total population of nearly 25,000,000.

The distance from Philadelphia to San Francisco is 3490 miles; from New York City to San Francisco 3564 miles. Road conditions are up to the average.

No Monotony in Tour.

There is no monotony in a tour over the Pikes Peak Ocean-to-Ocean Highway. There is always something that

appeals to the person who is interested in the story of the nation's development, its stirring history, or its natural wonders—whether it is the sky line of America's greatest city or a sunset behind the Golden Gate that meets his eye; whether he visits the great steel mills of Pennsylvania, the manufacturing districts of New Jersey, or the automobile factories of Indiana; whether he

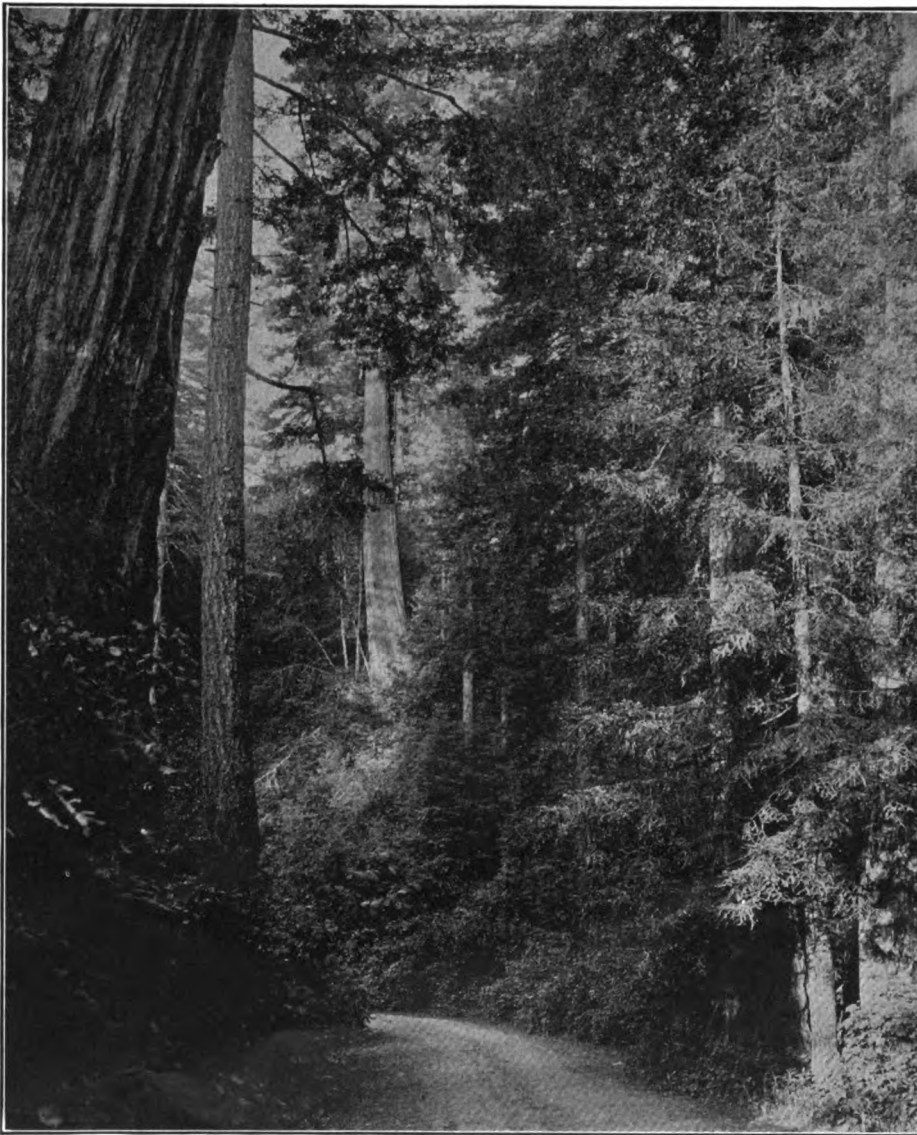
in California; whether it is a reclamation project in the West or a munitions factory in the East that reminds him of the manifold activities of his government; whether he camps or fishes alongside the rippling mountain streams or registers at the ultra-fashionable hotel; whether he visits the coal mining district in Illinois and Ohio or the gold and silver mining districts in Colorado, Utah

and Nevada; whether the road follows a trail blazed by the Indian or approaches a quarry where the bones of pre-historic animals are being unearthed; whether he inspects the Wilbur Wright Aviation Field in Ohio or the ruins of a frontier fort or mission in California; or whether he is touring that part of the highway which unfolds enchanting vistas as it crosses the Alleghanies, that winds along the wooded slopes of the Sierras, or that takes him through the rugged canons and almost to the timber line in the wonderland of the Rockies.

There is considerable hard surfaced road in the eastern states. Like other transcontinental routes through the central states, this is as yet only a graded dirt road. It follows the "divide country," rather than large water courses, and is kept in good condition by graveling and dragging. Through the western states, the mountain roads, except for some difficult stretches, are

generally good; all the way it is through settled districts. Steady progress toward better roads is being made in every state.

The Pikes Peak Ocean-to-Ocean Highway, with its independent alignment clear across the continent, is a federation of state organizations, including the William Penn Highway Association in Pennsylvania, the Hannibal-Springfield Highway Association in Illinois, the Han-



La Honda Redwoods in California, 25 Miles from San Francisco.

passes through the corn fields of Illinois and Missouri, the wheat fields of Kansas, the bean fields of the eastern Colorado dry farm, the cattle and sheep ranges of the West, the fruit orchards of the Mississippi valley, the wonderful irrigated districts in Colorado, Utah and Nevada, or the orange and almond groves of California; whether he is crossing the rolling prairies or winding through the pine forests of the Feather river district

nibal and St. Joseph Cross State Highway Association in Missouri, the Rock Island Highway Association in Kansas, the original Lincoln Highway Association in Colorado, the Overland Trail Club in Nevada and the Feather River Route Association in California. With these there have been organized new state divisions in New Jersey, Ohio, Indiana, Utah and parts of Illinois and California.

All of these have been affiliated together to link up into one connected highway the great central route connecting the shores of the Atlantic and Pacific oceans. This association is a department of the National Highways Association and it also cooperates with the American Automobile Association.

The official marking of the Pikes Peak Ocean-to-Ocean Highway consists of red and white bands, 10 inches each in width, painted on poles at turns and cross roads and also frequently between turns. Enamelled steel signs, reproducing the official marker design, are placed at each entrance to each town and also at intervals of not more than five miles between towns.

Folders containing reports as to road conditions in the eastern, central and mountain divisions have been published for free distribution.

The national headquarters and office of the secretary-treasurer are established at Colorado Springs, Col. The office of the president, C. F. Adams, is at Chillicothe, Mo. Information regarding the highway may be obtained by addressing either of these offices.

ITINERARY.

PIKE'S PEAK HIGHWAY.

Night Stops—New York, Reading, Pa.; Altoona, Pittsburgh, Columbus, O.; Indianapolis, Ind.; Decatur, Ill.; Quincy, Brookfield, Mo.; Belleville, Kan.; Norton, Burlington, Col.; Colorado Springs, Leadville, Glenwood Springs, Rangely, Colton, Utah; Salt Lake City, Snowville, Wells, Nev.; Battle Mountain, Lovelock, Truckee, Cal.; Sacramento, San Francisco. Twenty-five Days, 3594.2 Miles.

New York-Reading.

Miles	Miles
New York..... 0.0	Easton..... 75.9
Newark..... 10.6	Bethlehem..... 87.4
Morristown..... 30.2	Allentown..... 93.1
German Valley..... 47.4	Kutztown..... 111.0
Washington..... 62.0	Reading..... 128.3

Reading-Altoona.

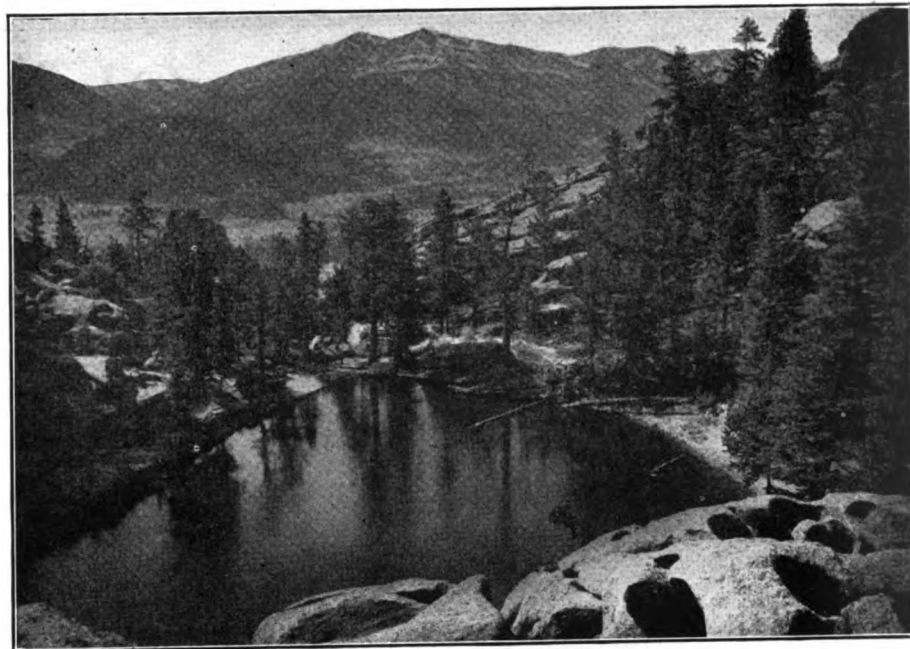
Miles	Miles
Reading..... 0.0	Newport..... 79.9
Stouchsburg..... 17.0	Mexico..... 97.4
Lebanon..... 27.8	Lewistown..... 112.9
Hummelstown..... 43.9	Belleville..... 127.6
Harrisburg..... 53.4	Alexandria..... 155.1
Clark's Ferry..... 67.9	Altoona..... 190.1

Altoona-Pittsburgh.

Miles	Miles
Altoona..... 0.0	N. Alexandria..... 66.6
Holidaysburg..... 7.0	Delmont..... 74.5
Summit..... 17.4	Wilkesburg..... 92.7
Clyde..... 47.5	Pittsburgh..... 99.7

Pittsburgh-Columbus.

Miles	Miles
Pittsburgh..... 0.0	N. Comertown..... 112.1
Florence..... 24.4	Franklin..... 130.6
Holiday Cove..... 36.7	Dresden..... 141.7
Steubenville..... 44.7	Newark..... 163.1
Cadiz..... 65.8	Columbus..... 179.1
Uhrichsville..... 87.0	Columbia C..... 183.1



Rocky Mountain National Park.

Columbus-Indianapolis.

Miles	Miles
Columbus..... 0.0	Richmond..... 110.1
Brighton..... 30.2	Germantown..... 124.3
Springfield..... 44.1	Ogden..... 142.0
Fairfield..... 57.0	Greenfield..... 155.2
Dayton..... 68.1	Cumberland..... 168.6
Eaton..... 93.1	Indianapolis..... 179.0

Indianapolis-Decatur.

Miles	Miles
Indianapolis..... 0.0	Chrisman..... 85.3
Danville..... 19.7	Newman..... 103.5
Bainbridge..... 35.9	Tuscola..... 122.4
Rockville..... 59.1	Hammont..... 141.2
Montezuma..... 67.7	Decatur..... 164.8

Decatur-Quincy.

Miles	Miles
Decatur..... 0.0	Beardstown..... 100.9
Buffalo..... 25.2	Rushville..... 114.0
Springfield..... 40.8	Mt. Sterling..... 131.7
Berlin..... 55.9	Clayton..... 144.5
Jacksonville..... 73.4	Camp Point..... 150.6
Concord..... 84.6	Quincy..... 174.7

Quincy-Brookfield.

Miles	Miles
Quincy..... 0.0	Clarence..... 79.1
Hannibal..... 18.7	Macon City..... 91.7
Monroe City..... 45.7	Bucklin..... 120.1
Shelbina..... 66.0	Brookfield..... 131.3

Brookfield-St. Joseph.

Miles	Miles
Brookfield..... 0.0	Hamilton..... 57.3
Wheeling..... 18.4	Cameron..... 72.4
Chillicothe..... 20.0	St. Joseph..... 107.3

St. Joseph-Belleville.

Miles	Miles
St. Joseph..... 0.0	Seneca..... 85.8
Troy..... 14.8	Beattie..... 113.0
Highland..... 35.2	Marysville..... 121.1
Hiawatha..... 49.5	Washington..... 148.0
Sabetha..... 68.0	Belleville..... 155.5

Belleville-Norton.

Miles	Miles
Belleville..... 0.0	Kensington..... 79.3
Courtland..... 16.7	Phillipsburg..... 95.5
Mankato..... 34.0	Prairie View..... 113.5
Smith Center..... 65.2	Norton..... 138.0

Norton-Burlington.

Miles	Miles
Norton..... 0.0	Colby..... 96.3
Delville..... 21.5	Brewster..... 115.0
Jennings..... 40.2	Goodland..... 133.3
Seiden..... 63.2	Burlington..... 163.7

Burlington-Colorado Springs.

Miles	Miles
Burlington..... 0.0	Limon..... 83.9
Stratton..... 18.4	Mattison..... 105.5
Selbert..... 34.7	Calhan..... 127.8
Arriba..... 58.7	Falcon..... 149.1
Genoa..... 70.6	Colorado Spr'gs..... 168.6

Colorado Springs-Leadville.

Miles	Miles
Colorado Spr'gs..... 0.0	Bath..... 75.3
Edlowe..... 20.6	Buena Vista..... 93.5
Pulvero..... 48.1	Granite..... 111.1
Hartsel..... 63.5	Leadville..... 135.2

Leadville-Glenwood Springs.

Miles	Miles
Leadville..... 0.0	Walcott..... 48.3
Pando..... 16.0	Gypsum..... 65.8
Redcliff..... 22.6	Glenwood Springs..... 90.8

Glenwood Springs-Rangely.

Miles	Miles
Glenwood Springs..... 0.0	Meeker..... 75.9
Rifle..... 33.4	Rangely..... 136.9

Rangely-Colton.

Miles	Miles
Rangely..... 0.0	Roosevelt..... 89.7
K Ranch..... 22.0	Duchesne..... 121.9
Vernal..... 57.3	Colton..... 172.5

Colton-Salt Lake City.

Miles	Miles
Colton..... 0.0	Provo..... 57.5
Thistle..... 33.7	Alpine..... 71.5
Spanish Forks..... 47.0	Salt Lake City..... 103.1

Salt Lake City-Snowville.

Miles	Miles
Salt Lake City..... 0.0	Honeyville..... 73.9
Ogden..... 37.9	Blind Springs..... 89.8
Brigham City..... 60.1	Snowville..... 117.3

Snowville-Wells.

Miles	Miles
Snowville..... 0.0	Montello..... 111.6
Lucin..... 94.2	Wells..... 166.2

Wells-Battle Mountain.

Miles	Miles
Wells..... 0.0	Carlton..... 79.6
Deeth..... 20.5	Richmond Mine..... 96.9
Elko..... 56.4	Battle Mtn..... 133.0

Battle Mountain-Lovelock.

Miles	Miles
Battle Mtn..... 0.0	Mill City..... 85.6
Golconda..... 40.0	Humboldt..... 99.2
Winnemucca..... 57.0	Lovelock..... 132.4

Lovelock-Truckee.

Miles	Miles
Lovelock..... 0.0	Verdi..... 119.7
Wadsworth..... 75.8	Truckee..... 143.1
Reno..... 107.8	

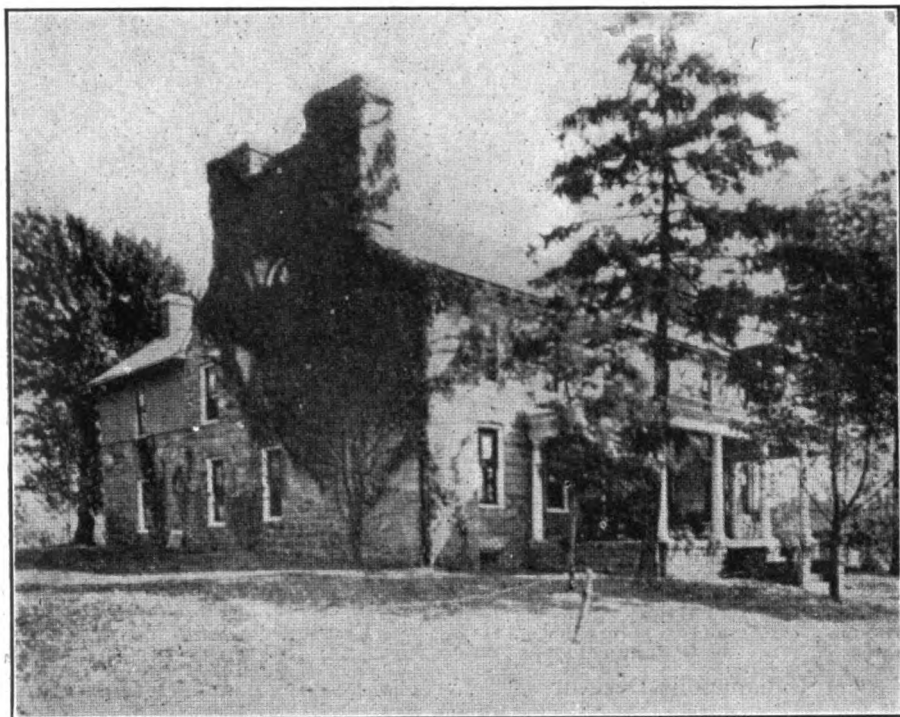
Truckee-Sacramento.

Miles	Miles
Truckee..... 0.0	Auburn..... 76.5
Emigrant Gap..... 32.6	Folsom..... 95.6
Colfax..... 58.5	Sacramento..... 117.4

Sacramento-San Francisco.

Miles	Miles
Sacramento..... 0.0	Livermore..... 95.1
Lodi..... 36.6	Oakland..... 130.7
Stockton..... 52.4	San Francisco..... 136.2

NATIONAL OLD TRAILS



Old Stone House Near Brownsville.

FOLLOWING the National Old Trails the tourist goes through the heart of the country, from ocean to ocean, if he makes the complete itinerary, or he may branch off to roads leading to almost any part of the United States. From all angles of interest, this transcontinental highway, with termini at Washington, Baltimore and Los Angeles, enjoys great popularity among tourists.

From New York to Philadelphia the Lincoln Highway is followed. The route then turns southward, running along the Delaware river to Wilmington, thence through Elkton across the Susquehanna river to Bel Air, about 25 miles out of Baltimore. From Baltimore to Washington, a distance of about 39 miles, the route is over the road once known as the "Washington Road," which was traveled by stage coaches in the colonial days. Beyond Beltsville the Maryland agricultural station and the government aviation grounds are passed and a number of excellent examples of colonial architecture in old residences are seen.

The section is rich in historical interest, and the tourist visits scenes of important events that occurred in both the Revolution and the Civil wars. Upon entering Washington he will be tempted to stay over the allotted time. A full week is not too much to spend in inspecting the various government buildings and institutions. A ride around the principal avenues in the section of the Capitol and White House before leaving will suffice

to give one a good idea of the layout of the city and the magnificent specimens of architecture.

Drive Is Entrancing.

The drive out of Frederick, Md., is entrancing, passing out of Wisconsin avenue among beautiful buildings and estates with well kept grounds. One place of particular interest is the section of the road from District of Columbia boundary line to Rockville, which is maintained by the government as an experimental highway for determining the qualities of different kinds of surfacing. The various kinds of materials used in the sections are designated by signs placed along the roadway.

Between Urbana and the Monocacy river is the battlefield of Monocacy, where General Lee Wallace and his command were defeated by the Confederate soldiers under General Jubal Early in 1864.

Frederick, Md., was one of the main strategic points in the war for freedom, and during the Civil War was occupied by the Confederate soldiers. Thomas Johnson, the first state governor of Maryland, who nominated George Washington as commander of the American armies, had his summer home on Rose Hill, which lies on the outskirts of the city. A stone freight house of the Baltimore & Ohio railroad, said to be the oldest in the world, is also located in Frederick. In crossing over Carroll's creek an inscription will be noticed on the bridge marking the spot where, leg-

end says, Barbara Fritchie lived.

On the road from Frederick to Braddock Heights the mountains come into view for the first time and very soon the ascent of Catoclin mountain begins. In less than two miles the road rises about 460 feet between Braddock Village and Braddock Heights. From the latter elevation a beautiful view of all the surrounding country may be obtained, particularly South Mountain battlefields and the War Correspondents memorial arch.

Through Historic Places.

In Middletown, the next closely built up place, is the old home of Commodore Geisinger, who fought naval battles with the pirates at Tripoli and Algiers. Beyond this point the road rises precipitately again. Beyond the stone Catholic church on South Mountain, which is reached through Turner's Gap, there are a number of memorial tablets, on which a description is given of the movements of the opposing armies across the mountain.

Between South Mountain and Hagerstown, beyond Boonsboro, there is a short cut to Sharpsburg, from which place the Antietam battlefield may be reached. Hagerstown is the center of a number of trunk highways extending North, South, along the Chesapeake & Ohio canal and Potomac river for a distance of 10 miles to Hancock, where it turns northward across the mountains. The country between these two points becomes a beautiful panorama of exquisite scenery to the rapidly moving tourists.

The intervening distance, about 40 miles to Cumberland, is the most picturesque part of the entire trip. While the roads wind around like a path in a maze and goes up and down the most precipitous grades of any well traveled thoroughfare in the country, it is easily followed. Out of Hancock the route leads up and over Tonoloway ridge, and further on over Sideling hill, where there is an ascent of 760 feet in a mile and a half. Down the other side of this range there is a descent of 495 feet in one mile.

Short Turns and Peaks.

The roads through this section are curved and contain many short turns, consequently, the motorist should drive very carefully, as while no danger exists to the machine that is under control, fast or reckless driving would be very foolish. Before the ascent of Town Hill, which is the next peak to be negotiated, some of the most beautiful scenic effects of the entire trip throughout the mountains become visible. The environment seems quiet and peaceful, as there is little evidence of habitation in view and one can see great distances into the mountains and across valleys and low plains. Coming down the west slope of Green Ridge, which is the next high elevation on the road, one of the largest

cultivated apple orchards in the United States comes into view. There are nearly 50,000 trees in this orchard. Descending into the valley of Fifteen Mile Creek, Polish mountain looms in the distance, across a great ravine, extending as far as the eye can see to the north and south.

Climbing Martin Mountain.

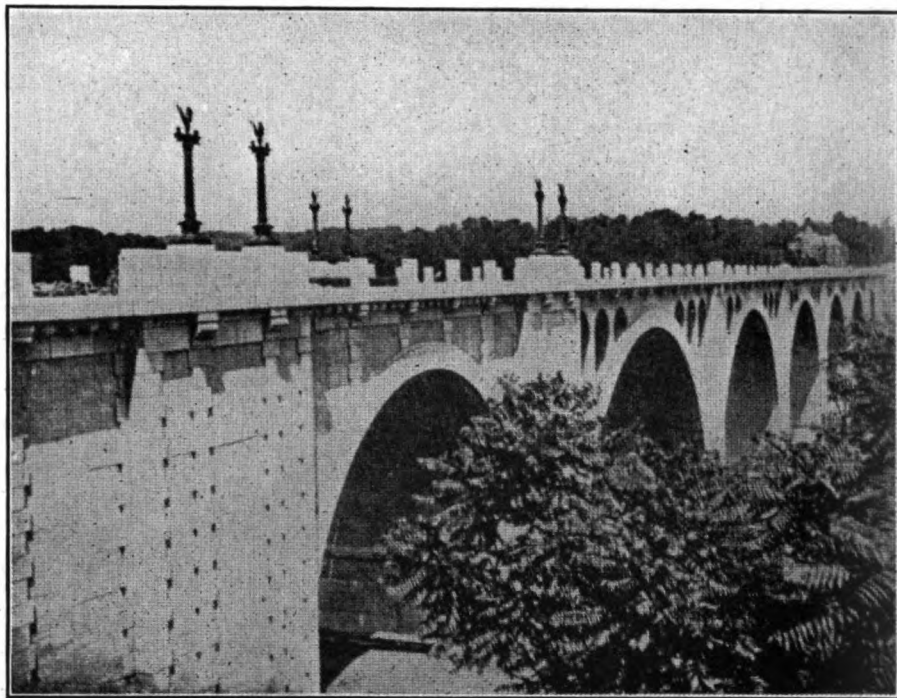
Passing on through Gilpin and into Flintstone, there is a hotel 108 years old, formerly known as the "Piper House," which looks little the worse for wear of the elements. A few miles out of Flintstone the ascent of Martin Mountain begins, during which a rise of 535 feet in a little over a mile is made to the summit, 1720 feet above the sea level. Down the west slope the road leads through the valley into Cumberland on the Potomac river, the center of transportation of that section. This city is about half way between Washington and Wheeling and is a convenient stopping place on the third night out, as it affords good hotel accommodations.

From Cumberland to Wheeling the distance is about the same as that traveled on the previous day and the route leads through the section which became prominent historically during the French and Indian war. This section was entirely constructed at the expense of the government. As far as Uniontown, which is half way to Wheeling, the road continues through the mountainous country, attaining much higher altitudes, however, the elevation at the summit of Big Savage Mountain being 2880 feet and at Meadow Mountain 2792 feet. A few miles out of Farmington, close by the road, is the site of "Fort Necessity," where during the French and Indian war George Washington was forced to surrender his command.

The remainder of the road into Uniontown is through a heavily wooded section. There are many old taverns in this quaint town and it also contains many land marks nearly a century old. Twelve miles from Uniontown is Brownsville, on the Monongahela river, and 15 miles further on, Washington, which is the nearest point on the National road to Pittsburgh.



Toll House Six Miles West of Cumberland



Bridge Over Rock Creek on Connecticut Avenue Route Out of Washington, Toward Rockville and Frederick.

Now the Ohio Valley.

The route from Washington to Wheeling is mostly down hill and crosses the panhandle of West Virginia into the valley of the Ohio river. West of this point lays the great level farming lands and prairies that the pioneers of over 100 years ago sought after traveling over the National road to the Ohio river, and there is today an enormous amount of travel East and West through the city; more, probably, than through any other city of its size in the United States.

Here the Ohio river is crossed into Ohio. There is now an unbroken stretch of brick paving 16 feet wide through Zanesville to Columbus.

From Columbus to the Indiana state line, on the old National road, there is much brick paving and from there on to St. Louis rough dirt roads, about the worst of the trip, are encountered.

At Booneville, Mo., the third of the old trails, the Santa Fe, begins and continues through Kansas City, across Kansas and a corner of Colorado, through New Mexico to Santa Fe.

Westward, Ever Westward.

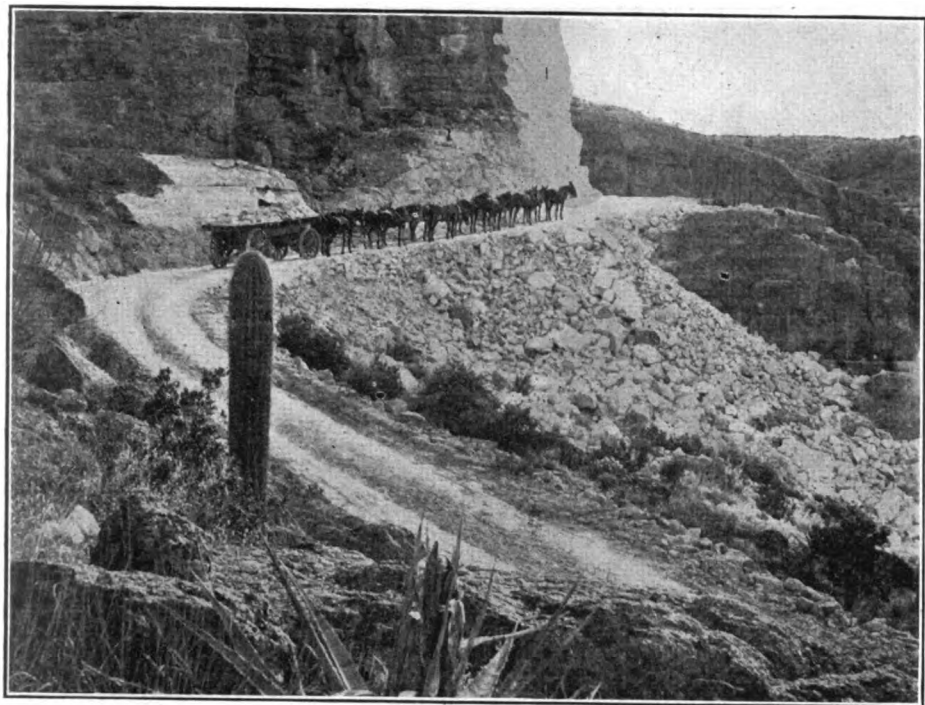
Over excellent roads, through the wonderful Kansas wheat fields, the route goes west across the state. The Colorado line is crossed between Coolidge, Kan., and Holly, Col. The route crosses the Arkansas river at La Junta and shortly crosses the New Mexico line to Raton, to which it goes down through the Raton pass.

The Marvelous Southwest.

The tourist first breaks into the real land of enchantment in leaving Raton, N. M., en route for Santa Fe. There is the wonderland of wonderlands with more marvelous scenic features than exist anywhere in the world. Even the atmosphere has its own peculiar charm, being rare and dry, although stimulating in its effect upon the senses.

This is Pueblo country and the Pueblo Indians, unlike their brethren of the red skin, abjured all the advances of the white man to change their modes, dress, speech, customs and religions. They still adhere to the same type of abode and manner of eating and dressing as was handed down to them by their forefathers who met the Spanish and French explorers that came into their country over 300 years ago. The nondescript is present on every hand and the further into this maze of marvels the traveler goes the more unexpected becomes the expected.

Santa Fe and the country immediately about the city is worthy of a stop over of several days and for an even longer period if one delights in delving into ancient lore. La Ciudad Real de la Santa Fe de San Francisco, as Santa Fe was called when it was founded by the Span-



Scenery in Arizona.

iards in 1605, 150 years before the United States became a nation, was a settlement, dating back into antiquity. For this reason it is now the leading center of archaeological research in the United States and a school and museum of the American Institute is maintained there. It is in an old palace which has housed 76 rulers of Mexican and Spanish blood and 19 American territorial governors.

Grand Canyon of Arizona.

Passing into Arizona the first of the great sights of the southwest that is encountered is a section of the Petrified Forest. This is looked upon as one of the chief marvels of the world. It is spread over several large tracts, the first of which is encountered six miles out of Adamana. Three miles further on is the second forest and the third and the largest is 13 miles southwest of Adamana. There are two others, the Blue Forest and the North Sigillaria. The first named is seven miles southeast of Adamana and the latter nine miles north of that place.

Leaving Flagstaff the tourist takes the highway northward, a distance of 79 miles to Grand View Point, which is located on the rim of the canyon, where one of the most wonderful views of the region is to be had. From this point the highway runs through a winding course for 14 miles along the rim of the canyon to Eltovar Hotel, where another wonderful view is visible. From the latter point the highway turns southward again and joins the main transcontinental highway at Williams.

Across the Mojave desert, once a great graveyard for travelers and their animals, a fine modern road, costing \$10,000 to \$15,000 a mile, has been built. It is kept oiled most of the way and alkali dust is scarce on the run of 165 miles, which can be made at better than 20 miles an hour by almost any car. There are stations, too, where car supplies and

food may be purchased. From Barstow, on the western side of the desert, it is a run of 78 miles to San Bernardino. El Camino Real, from San Diego to the north, connects the old Spanish missions, rare specimens of a distinctive architecture, with each other. Los Angeles is 68 miles from San Bernardino.

California is noted for its splendid highways, which always delight every motorist from the East. There are a great number of points of interest in southern California, and the tourist may spend a number of days in the vicinity of Los Angeles without fear of monotony.

ITINERARY.
NATIONAL OLD TRAILS ROAD.

Night Stops—New York City, Philadelphia, Washington, D. C.; Cumberland, Md.; Wheeling, W. Va.; Columbus, O.; Indianapolis, Terre Haute, Ind.; St. Louis, Columbus, Mo.; Kansas City,

Emporia, Hutchinson, Dodge City, Syracuse, Kan.; La Junta, Trinidad, Col.; Las Vegas, Santa Fe, Albuquerque, McCarty's, Gallup, N. M.; Holbrook, Flagstaff, Kingman, Ariz.; Amboy, San Bernadino, Los Angeles, Santa Barbara, Pasa Robles, Santa Cruz, San Francisco, Cal. Thirty-one Days, 3726 Miles.

New York-Philadelphia.

Miles		Miles
New York.....	0.0	Monmouth Jct. 46.8
Jersey City.....	6.3	Trenton 63.4
Newark 12.2		Oxford Valley. 70.0
Elizabeth 18.0		Hulmeville 73.6
Rahway 23.1		Andalusia 78.9
Iselin 27.4		Torrendale 81.1
Metuchen 31.4		Holmesburg 83.4
New Brunswick 36.0		Philadelphia .. 95.6

Philadelphia-Washington.

Miles		Miles
Philadelphia ..	0.0	Perryville 60.9
Darby 6.3		Webster 66.0
Glendolen 8.2		Churchville 70.5
Norwood 9.3		Belair 76.3
Eddystone 12.5		Kingsville 83.5
Chester 13.6		Carney 89.7
Marcus Hook..	18.5	Baltimore 100.4
Claymount	20.1	Elkridge 109.4
Holly Oak.....	21.2	Laurel 121.4
Wilmington ...	26.4	Contee 123.4
Elsmere Jct. ...	29.5	Beltville 126.9
Marshalltown..	32.0	Hyattsville 133.4
Newark 40.0		Bladensburg ... 133.9
Elkton, Md. ...	46.6	Washington ... 139.4

Washington-Cumberland.

Miles		Miles
Washington ...	0.0	Benevola 62.7
Bethesda 7.4		Hagerstown 70.7
Rockville 15.3		Hancock 97.7
Galtherburg ...	20.5	Bellegrove 110.7
Clarksburg ...	28.5	Piney Grove ... 114.7
Hyattstown ...	32.4	Pratt 122.7
Frederick 43.7		Gilpen 125.7
Middletown ...	51.7	Flintstone 126.7
Boonsboro	59.7	Cumberland ... 139.7

Cumberland-Wheeling.

Miles		Miles
Cumberland ...	0.0	Summit 56.0
Frostburg 11.0		Uniontown 62.0
Grantville 25.0		Brownsville ... 74.0
Keyser Ridge..	31.0	Scenery Hill... 86.0
Addison 36.0		Washington 99.0
Somerfield	40.0	Claysville 109.0
Farmington ...	50.0	Wheeling 132.0

Wheeling-Columbus.

Miles		Miles
Wheeling 0.0		Norwich 60.5
Bridgeport 1.2		Zanesville 72.4
St. Clairsville..	10.9	Sterling 80.5
Lloydsville	16.1	Brownsville ... 86.3
Morristown ...	19.9	Linnville 91.0
Hendricksburg	25.6	Jacktown 95.0



Highway Passing Through the Hills.

Fairview.....	29.0	Hebron.....	99.0
Washington....	40.6	Kirksville.....	105.0
Cambridge.....	49.0	Etna.....	111.6
New Concord....	57.3	Columbus.....	128.1

Columbus-Indianapolis.

Miles		Miles	
Columbus	0.0	Dayton	67.8
Alton	9.4	New Lebanon	78.3
W. Jefferson	14.4	Johnsville	90.2
Lafayette	21.8	W. Alexandria	96.2
Summerford ...	26.5	Eaton, O.	91.7
Brighton	30.3	Richmond, Ind.	107.6
Vienna	32.9	Centerville	113.7
Harmony	37.5	Cambridge City	123.0
Springfield	43.4	Lewisville	132.8
Enon	51.2	Knightstown	142.2
Fairfield	57.4	Greenfield	155.2
Harshman	63.7	Indianapolis	176.4

Indianapolis-Terre Haute.

Indianapolis		Terre Haute	Miles
	Miles		
Indianapolis...	0.0	Coatsville	40.0
Bridgeport	9.0	Reelsville	45.9
Plainfield	13.8	Harmony	51.8
Belleville	18.7	Brasil	54.9
Stilesville	26.9	Seeleyville	62.5
Mt. Meridan....	33.9	Terre Haute...	70.4

Terre Haute-St. Louis.

Terre Haute-St. Louis	
Miles	Miles
Terre Haute.....	0.0
Marshall, Ill.....	16.8
Martinsville.....	27.6
Casey.....	33.9
Greenup.....	43.7
Teutopolis.....	62.1
Effingham.....	66.0
Altamont.....	80.4
Vandalia.....	100.2
Hagerstown.....	104.5
Mulberry.....	111.3
Greenville.....	120.0
Pocahontas.....	130.0
Highland.....	139.0
Collinsville.....	160.0
St. Louis, Mo.....	172.0

St. Louis-Columbia.

St. Louis		Columbia	
	Miles		Miles
St. Louis	0.0	Warrenton	65.9
Wellston	6.4	Jonesburg	75.7
Pattonville	14.4	Danville	88.7
St. Charles	19.8	Mineola	91.4
Colterville	30.8	Calwood	109.1
Wentzville	45.1	Fulton	117.0
Fortistell	52.1	Millersburg	129.1
Wright	56.6	Columbia	140.7

Columbia-Kansas City.

Miles		Miles	
Columbia	0.0	Dover	103.5
Rockport	14.4	Lexington	114.5
New Franklin	30.1	Wellington	121.6
Booneville	33.1	Levasy	132.3
Arrow Rock	53.6	Independence	150.2
Marshall	70.5	Centropolis	154.4
Waverly	92.3	Kansas City	159.2

Kansas City-Emporia.

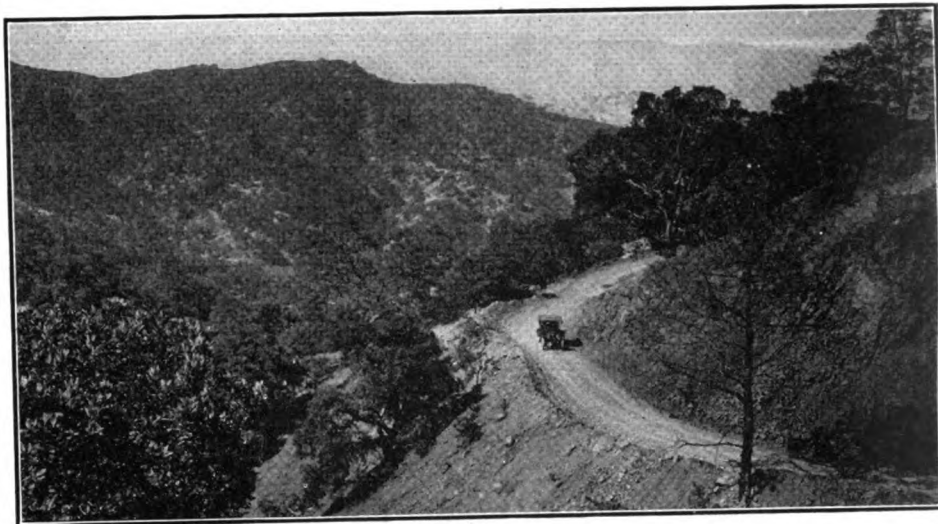
	Miles		Miles
Kansas City...	0.0	Ottawa	71.2
Martini City...	16.4	Williamsburg..	88.4
Olathe	28.8	Waverly	101.5
Edgerton	46.7	Emporia	134.1

Emporia-Hutchinson.

Emporia-Hutchinson			
	Miles		Miles
Emporia	0.0	Florence	48.8
Cottonwood	21.8	Penbody	63.7
Elmdale	28.0	Halstead	95.2
Clements	35.7	Hutchinson	122.3

Hutchinson-Dodge City.

Miles		Miles	
Hutchinson ...	0.0	Great Bend....	68.0



A Road in California.

Sterling.....	24.9	Kingsley.....	115.7
Lyons.....	34.4	Spearville.....	137.7
Chase.....	44.1	Dodge City....	154.8
Ellinwood.....	57.6		

Dodge City-Syracuse.

	Miles		Miles
Dodge City....	0.0	Lakin	78.1
Colmarron	19.2	Kendall	95.0
Ingalls	26.2	Syracuse	107.4
Garden City....	53.0		

Syracuse-La Junta.

	Miles		Miles
Syracuse	0.0	Prowers	65.4
Holly	22.0	Las Animas....	93.7
Granada	39.7	La Junta.....	115.5
Lamar	57.3		

La Junta-Trinidad.

Miles		Miles	
La Junta.....	0.0	Kadrew	76.2
Timpas	28.3	El Mora.....	87.6
Thatcher	54.8	Trinidad	91.3

Trinidad-Las Vegas.

Trinidad-Las Vegas.			
	Miles		Miles
Trinidad	0.0	Springer	69.7
Raton, N. M.	25.4	Wagon Mound ..	97.0
Maxwell	54.1	Watrous	120.5
French	58.9	Las Vegas.....	141.0

Las Vegas-Santa Fe.

	Miles		Miles
Las Vegas.....	0.0	Pecos	49.5
Tecolote	12.0	Glorieta.....	55.6
Bernal	18.2	Canoncito	60.0
Pajarita	40.5	Santa Fe.....	75.2
Rowe	42.8		

Santa Fe-Albuquerque.

	Miles		Miles
Santa Fe.....	0.0	Sandia	52.5
Domingo	26.9	Alameda	58.7
Algodones	41.2	Albuquerque...	66.7

Albuquerque-McCarty's.

Miles	Miles
Albuquerque... 0.0	Casa Blanca... 55.1
Atrisco 3.3	McCarty's 82.2
Laguna 48.3	

McCarty's-Gallup.

	Miles		Miles
McCarty's	0.0	Thoreau	43.0
Grant's	13.0	Gonzales	50.0
Totoc	17.0	Guam	54.0
Bluewater	25.0	Perea	58.0
Boca	33.0	Wingate	64.0
Chaves	40.0	Gallup	76.0

Gallup-Holbrook.

	Miles		Miles
Gallup	0.0	Pinto	88.0
St. Michael's,		Petrified Forest	102.0
Aris.....	26.0	Carrizozo	111.0
Wide Ruins....	56.0	Holbrook	124.0
Navajo	81.0		

Holbrook-Flagstaff.

	Miles		Miles
Holbrook	0.0	Tolchaco	75.4
Winslow	36.0	Flagstaff	117.0
Leupp	64.6		

Flagstaff-Kingman.

	Miles		
Flagstaff	0.0	Pica	101.0
Riorden	7.0	Yampai	106.0
Bellemont	12.0	Field's Station.	108.0
Maine	20.0	Pench Springs.	120.0
Chandler	24.0	Cherokee	126.0
Williams	36.0	Truxton	132.0
McClellan	44.0	Valentine	139.0
Ash Fork	56.0	Hackberry	144.0
Pineveta S'tion	64.0	Antares	151.0
Crookton	69.0	Hualpai	158.0
Seligman	81.0	Louise	172.0
Chino	85.0	Kingman	174.0

Kingman-Amboy.

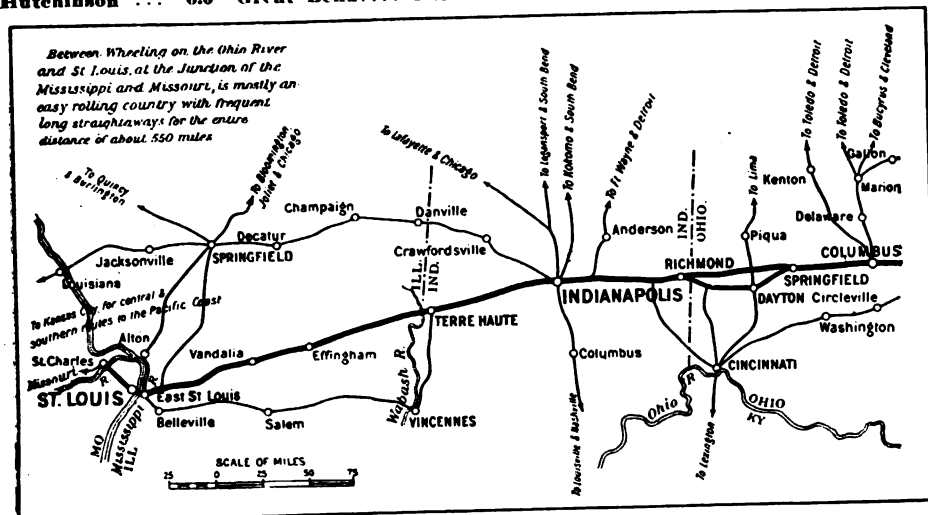
	Miles		Miles
Kingman	0.0	Homer	94.0
McConico	4.0	Goff's	102.0
Yucca	25.0	Fenner	111.0
Topcock	55.0	Danby	127.0
Needles	71.0	Cadiz	140.0
Kilnefelter	83.0	Amboy	154.0

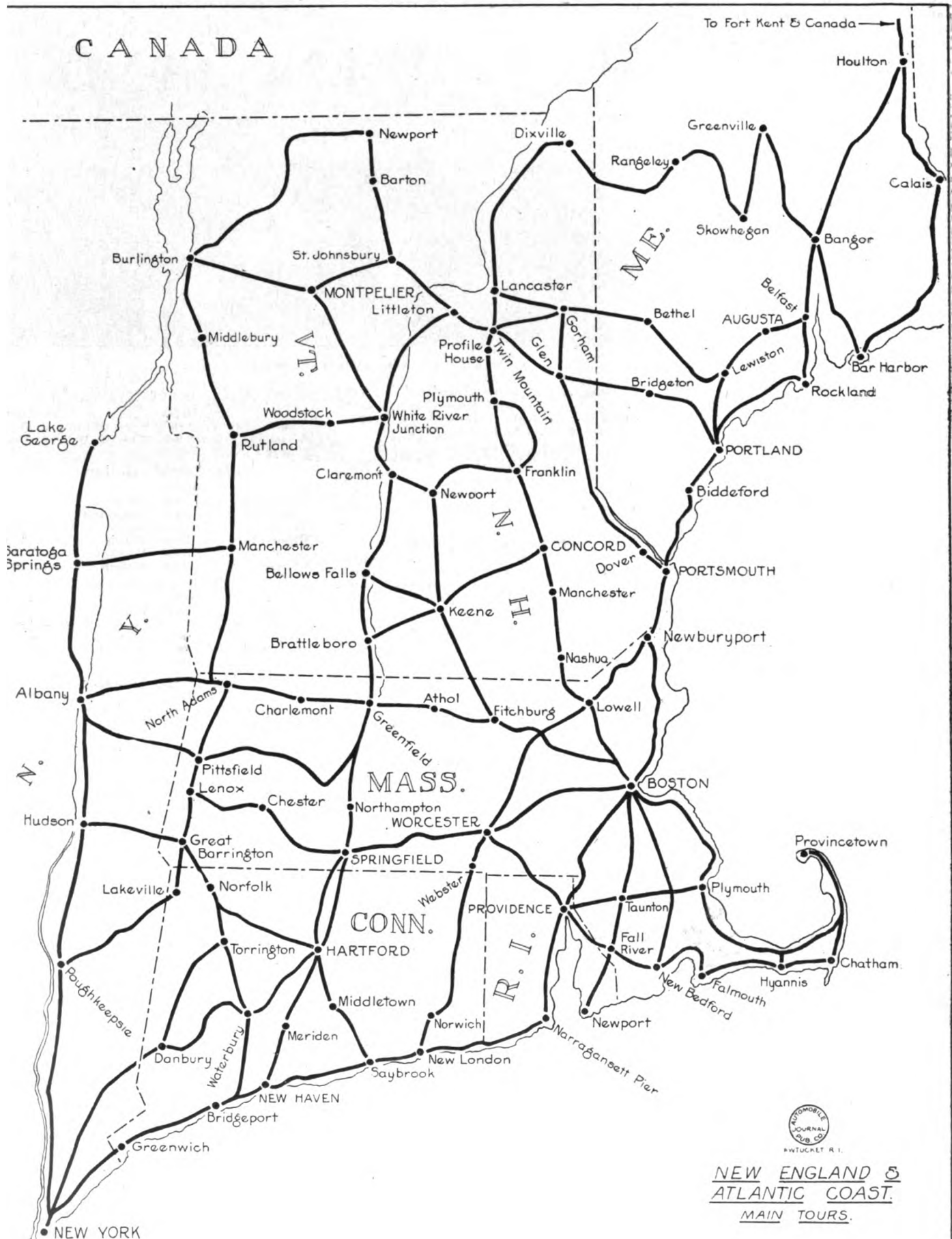
Amboy-San Bernadino.

	Miles		Miles
Amboy	0.0	Todd	88.0
Bagdad	7.0	Hicks	94.0
Ash Hill	21.0	Hellen	103.0
Ludlow	28.0	Oro Grade	113.0
Lavie	37.0	Victorville	119.0
Plagah	42.0	Hesperia	127.0
Hector	47.0	Cajon	140.0
Newberry	61.0	Cozy Dell Store	142.0
Mineola	67.0	Devore Store	149.0
Daggett	73.0	Vermont	151.0
Barstow	82.0	San Bernadino	160.0

San Bernadino-Los Angeles.

	Miles		Miles
San Bernadino.....	0.0	Pomona.....	46.8
Riverside.....	10.9	Lemon.....	54.8
Bloomington.....	18.7	San Marino....	72.7
Etiwanda.....	30.9	Le Senda.....	74.7
N. Cuckamonga.....	34.9	Pasadena.....	79.1
Upland.....	38.5	Los Angeles...	89.9





TOURING NEW ENGLAND

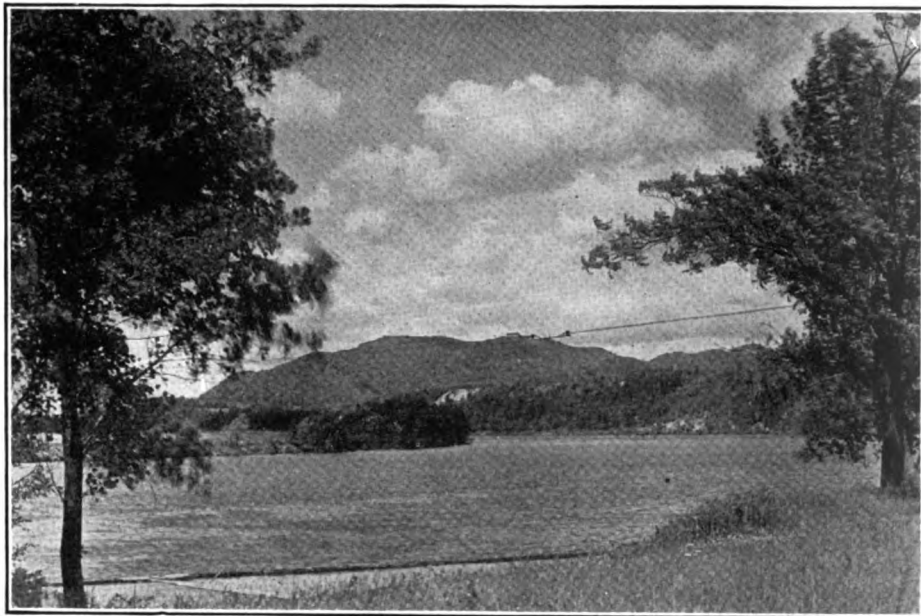
By Leon A. Dickinson.

TO NEARLY every one the task of planning a vacation is beset with numerous difficulties. The seashore provides bathing, but is nearly always hot; while the mountains are cool, but too often are devoid of opportunities for boating, bathing and fishing. How much more difficult must it be for the harassed motorist who starts to lay out his annual vacation tour! First, there is the question of roads. Good roads are jewels, but the flawless ones are few and far between. Moreover, what may be a very good road today is too often torn up and impassable tomorrow. Highway construction with its attendant detours may be necessary, but it certainly does cause the motorist a deal of trouble. It is the irony of fate that most detours are always encountered in the very hottest weather, and none at all in winter when the weather is too cold to permit extensive touring.

Question of Hotels.

Then, too, there is the question of hotels, scarcely secondary in importance to that of roads. The best hotels open late and close early, while during their season they are usually overcrowded. Thus it is frequently necessary for the motorist "en tour" to put up with accommodations which are either a joke or a tragedy, according to his disposition or digestion.

Bearing these things in mind it is readily seen that the pathway of the prospective tourist is not necessarily strewn with roses. On the contrary, if he starts on his tour without first securing advice from some competent source



Connecticut River and Mount Holyoke, Smith's Ferry, Mass.

his trail may well be marked with anathemas and blown out tires. It is vital that he choose for his tour a region where he is certain to find good roads and satisfactory hotel accommodations at convenient intervals. After this come the questions of diversification of scenery and historic associations. A well planned tour should include as much variety of scenery as possible for the sake of avoiding repetition, which may become monotonous. All mountains are beautiful, but too much hill climbing is bad for both car

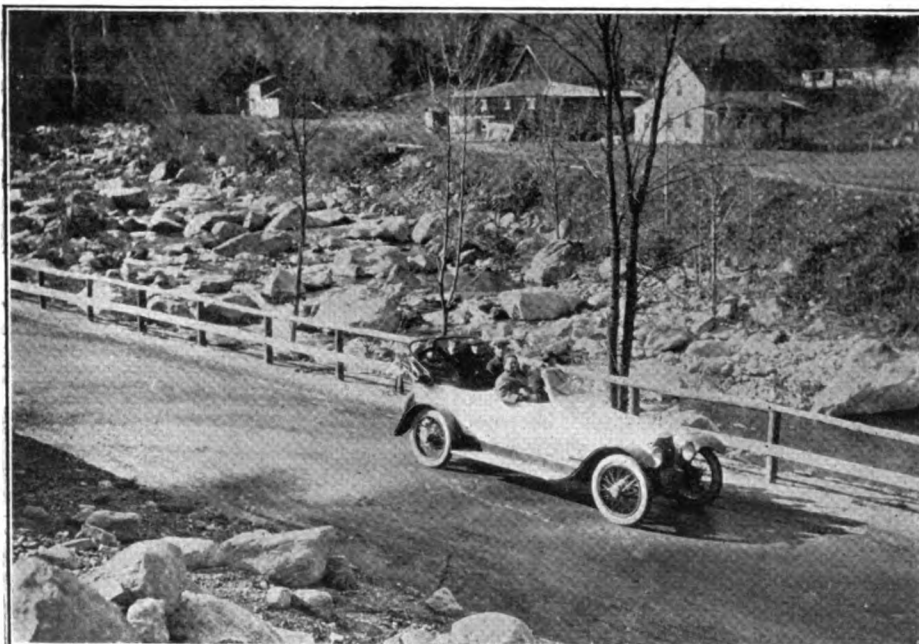
and occupants. Occasional glimpses of the ocean are inspiring, but a long trip of many miles along any seacoast is certain to become tedious after a while.

The ideal region for automobile touring is one which will enable the motorist to visit rugged mountains and fertile plains, ocean beaches and inland lakes, all within the relatively narrow time limits of one to two weeks. The only region which complies satisfactorily with all these rigid requirements is New England. I submit this, not as a personal opinion, but rather as a categorical statement of fact.

New England's Offerings.

There may be those who still doubt and perhaps dispute it, but opposition must surely turn to acquiescence in the end. Let us consider for a moment what New England has to offer for the tourist's delectation. Just to enumerate a few of her natural treasures, there are, for mountains, the Berkshires, the Green Mountains and the White Mountains; for lakes, Sunapee, Winnepesaukee, Rangleley, Moosehead, Belgrade and Lake Champlain; for river valleys, the Connecticut, Naugatuck, Merrimack, Androscoggin and Kennebec, and, finally, as a grand and glorious climax, more than 1000 miles of the finest and most fascinating sea coast scenery to be found anywhere in the whole United States.

No wonder New England is proud of her scenery—has she not just cause to be? Nor is scenery all that she can boast of. Historically she has no peer, for the early history of New England is substantially that of the nation. What schoolboy does not know the story of Plymouth Rock, or the Boston Tea



Picturesque Gorge at Foot of Hoosac Mountain.



On the Mohawk Trail.

Party, Paul Revere's Ride, Lexington and Concord, Faneuil Hall, King Philip's War, Bunker Hill, the Charter Oak and Roger Williams. These are but few of the historic shrines which dot New England from one end to the other, endearing her forevermore to those of us who love our country and are proud of the achievements of our forefathers who created her.

It is no part of the purpose of this article to go into details concerning the various possible tours which may be taken throughout this wonderful region. These details are available for the asking at such fountain heads of information as the Touring Bureau of the American Automobile Association at 501 Fifth avenue, and other recognized authorities in such matters. Nevertheless, a general outline of some of the best automobile routes will not be amiss, since it will serve the desirable purpose of stimulating interest in a region which will repay the motorist many times over in the form of pleasant surprises and still pleasanter memories.

Recognized Trunk Routes.

There are several well recognized trunk routes in New England which if followed wholly or in part are certain to afford a full measure of satisfaction, not only as regards the primary requisites of roads and hotels, but also with respect to scenic and historic points of attraction. One of these is the Shore Road to Boston with its extension through Portsmouth and Portland and along the general line of the Maine coast to Bangor and Bar Harbor. This is a very popular route with motorists because of its almost universally excellent road surface, as well as the wealth of first class hotels which are to be found at very frequent intervals. It is not perhaps advisable to use this route throughout its entire length, owing to a certain similarity of scenery which is true for nearly all coast lines. Nevertheless one or more sections of it should be includ-

ed in every tour which is taken in New England, such for instance as the stretch between Boston and Portland. Here, in a relatively few miles, are crowded some of the most charming bits of shore scenery to be found anywhere along the Atlantic coast. Salem, with its witchcraft legends; Gloucester, the quaintest of quaint fishing ports; Lynn, the premier shoe city of the country and home of the enormous plant of the General Electric Works; Portsmouth, with its naval station, and the beautiful beaches of Revere, Rye and York, are but a few of the many interesting places which abound along this popular highway.

Circuit of Cape Cod.

Another section of the trip along the Massachusetts coast is that which includes a circuit of Cape Cod. There is no other place quite like Cape Cod. It is an entity to itself and its almost complete absence of pretentiousness makes one feel at home from the very start. The old Cape Cod of song and story with its tales of hardy fishermen and seafaring men who wandered endlessly over the seven seas has gradually passed into oblivion. The chief business of Cape Cod today is raising cranberries and entertaining summer visitors and it has achieved success in both of these activities. The roads on Cape Cod are a never ending delight to the motorist and a wise and far seeing highway department takes good care that this enviable reputation which Cape Cod enjoys shall not be jeopardized.

The best way to reach Cape Cod from New York is to follow the shore road through New Haven and New London as far as Narragansett Pier and Saundertown. Here there is a ferry which takes one across one section of Narragansett Bay to Jamestown Island and thence across the rest of the bay to Newport. This summer home of the ultra-fashionable contains many points of historic interest as well as the so-called "cottages" of its millionaire inhabitants. The Old

Stone Mill, supposed by some to have been erected by the Norsemen; the old State House, which was built in 1739; the Perry House, home of Commodore Oliver H. Perry, following the battle of Lake Erie; the Redwood Library, which is believed to be the oldest library in the United States, and Trinity Church, dating back to 1725, are only a few of the historic shrines for which Newport is famous.

South Shore Route.

After Newport comes Fall River and New Bedford, two of Massachusetts' most prosperous manufacturing cities, and then, a few miles further on, Cape Cod itself. The route which is usually followed is that along the south shore of the cape through Falmouth and Chatham to Orleans and then back along the north shore to the home of the Pilgrim Fathers, Plymouth. Whoever motors this way should plan to stop for several hours at least in Plymouth. In addition to the famous Plymouth Rock there is Pilgrim Hall, which contains many interesting relics, memorials, antiques and works of art associated with early Plymouth history. Here also is the old graveyard containing the grave of Gov. William Bradford, and the Elder Brewster, as well as the ancient Howland House and Crow House, dating back respectively to 1666 and 1664. These two old houses are the only ones now remaining which were used by members of the Mayflower company.

Bay State Nearly Flat.

Another of the main traveled routes which affords an entirely different brand of scenery from that to be viewed along the shore is the one which follows the valley of the Connecticut river from the point where it empties into Long Island Sound almost in a straight line into the heart of the White Mountains. This broad and majestic river cuts straight through the heart of Connecticut and Massachusetts and then forms the boundary line between the states of New Hampshire and Vermont clear through to the Canadian border. The motorist from New York who decides to follow this route will run first along the shore of Long Island Sound to New Haven and thence almost due north, coming to the Connecticut river at Hartford, the capital of Connecticut. From this point the river is followed very closely, first on one side and then on the other nearly to the White Mountains, the route passing in succession through Springfield, Holyoke, Northampton, Greenfield, Battleboro, Bellows Falls, Claremont, White River Junction, Hanover and Woodsville. The



Road in Walpole, Mass.

section of the Connecticut valley which is included in the state of Connecticut and Massachusetts is nearly flat or gently rolling for several miles on each side of the river, and hence as may well be imagined, extremely fertile. The soil in this region has been found to be peculiarly adapted to the raising of certain crops, particularly tobacco and onions. Enormous quantities of both of these products are produced here annually, and for mile after mile practically nothing else is grown. Beginning at Holyoke and running northeast for quite a number of miles there is a range of high hills or low mountains, known as the Holyoke Range, which looms high above the comparative flatness of the surrounding landscape. The view from Mount Tom, which is the southernmost peak of this range, is truly superb, because it affords an uninterrupted panorama throughout more than three-quarters of the surrounding horizon.

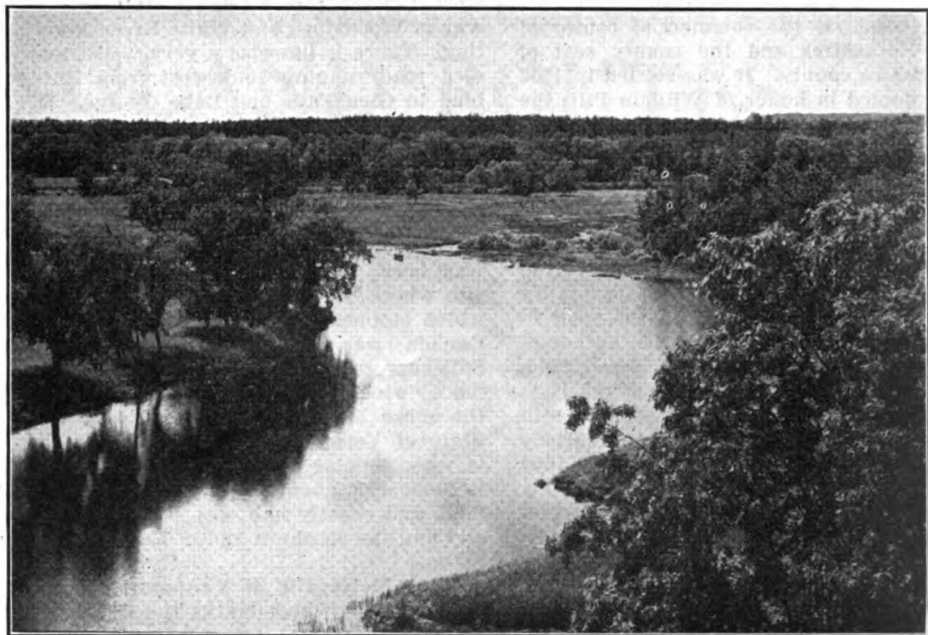
Branching off from this main trunk line at Greenfield is another route which is very popular with motorists, namely, that which runs north through Keene to Sunapee Lake and thence via Lake Winnepesaukee and Franconia Notch straight into the heart of the White Mountains. Although the road conditions are not quite as good on this route as those which prevail along the Connecticut river, this slight inferiority is more than compensated for by the surpassing beauty of the two lakes just mentioned. Each of these lakes is a veritable paradise for nature lovers and the shores of both are literally dotted with the camps and cottages of summer visitors. Canoes, motor boats and sail boats by the hundreds attest unmistakably the popularity of these lakes among lovers of aquatic sport and much of the time of those who spend their vacation at these lakes is spent either on or in the water.

Picturesque Run.

The third and last of the main north and south trunk routes which subdivide New England longitudinally and make it so easy of access for motorists from the south is that which includes the Berkshires and the Green Mountains and terminates at Burlington on the shore of the peerless Lake Champlain. By far the most picturesque run to the Berkshires from New York is through the western part of Connecticut via Danbury, Waterbury and Winsted, entering the Berkshires through Sheffield and Great Barrington. Danbury and Waterbury are widely known in the commercial world,



Highway Through the Litchfield Hills.



Glimpse of Nashua River, Nashua, N. H.

the former as the hat city and the latter as the home of the original Waterbury watch.

Many volumes have been written in description of the numerous points of scenic and historic interest which are centered in the Berkshires. This region has been famous for more than a century as a summer resort owing to its wonderful scenery and invigorating atmosphere. It remained for the advent of the automobile, however, with its necessary corollary of good roads, to bring to this region the full popularity which its climate and unique location so richly deserves. Famous for all time for the historic associations which abound on all sides, the praises of the Berkshires have many times been sounded in story and song by writers whose names are household words.

The real entrance to the Berkshires from the south is Great Barrington. Here on Aug. 16, 1774, eight months before the Battle of Lexington, armed men prevented the crowned judges from holding court and defied English authorities in the Massachusetts province, this constituting the first open resistance to British rule in America. William Cullen Bryant practised law in Great Barrington from 1815 to 1825 and was town clerk there for several years.

In Stockbridge.

Next in order comes Stockbridge, universally acknowledged to be one of the loveliest villages in America. In the words of Beecher, it is "famed for its meadow-elms, for the picturesque beauty adjacent, for the quiet beauty of a village which sleeps along a level plain just under the rim of the hills." Stockbridge contains several buildings and monuments which have much historic interest. A memorial chime tower marks the spot where stood the Indian Mission Church, founded by Sargeant, while the old Sargeant House still stands on the Edward Hill estate. Jonathan Edwards, the greatest of America's metaphysicians, lived in Stockbridge for many years, and

it was here that he wrote his famous treatise on "The Freedom of the Will." The site of the house where he lived is marked by a sun dial on the lawn of the Caldwell House. Another old house which possesses much interest is the historic Sedgwick Mansion, formerly the home of Catherine M. Sedgwick, the popular authoress. Here also is the birthplace of Cyrus W. Field, promoter of the first transatlantic cable. Monument Mountain, just south of Stockbridge and to the right of the main highway, commands a magnificent view of the Housatonic river for many miles, as well as of the whole Berkshire range.

Newport of Berkshires.

Lenox may justly be described as the Newport of the Berkshires, owing to the lavish display of wealth and luxury which is so much in evidence here. Numerous magnificent estates dot the surrounding landscape and are connected by a network of private roads, which are open to light horse drawn vehicles only. Among the most pretentious of these are the William D. Sloane and Charles Lanier places, which command a superb view; the Rathbone place, now owned by Mr. John Sloan; the Westinghouse place, with drives and walks of powdered marble, and the Stokes house, which was built around a great tree. Lenox was first settled in 1750 and received the family name of the Duke of Richmond. Fannie Kremler, the talented actress, had her summer home here for many years, and the "Perch," as it was called, still stands opposite the Foster mansion. Henry Ward Beecher used also to spend his summers in Lenox. Perhaps the most famous among the former residents of Lenox, however, was Nathaniel Hawthorne. Here, in a little red farm house near Stockbridge Bowl, or Lake Mahkeenoc, two miles to the southwest, the noted writer lived and worked for a year and a half. "The House of Seven Gables" and "The Wonder Book" were among the products of this versatile period during that period.

Historic Interest.

Pittsfield is the commercial center of the Berkshires and the county seat of Berkshire county. It was settled in 1752 and named in honor of William Pitt, the great English statesman. It contains a number of places of historic interest, among them being the quaint old Kellogg place in East street, and the Appleton or Plunkett house, also in East street, where Longfellow wrote "The Old Clock on the Stairs." Oliver Wendell Holmes lived for some time at a small villa two miles to the south of the city, on the road to Lenox, while Herman Melville, author of sea tales, also lived on the same road. Several miles to the west of Pittsfield is the famous Shaker Village, which still contains a few of the quaint and curious sect called "Shakers," who were thus named because of their antics during their religious ceremonies in former days.

From Pittsfield the route which we are now considering, runs directly north to the town of North Adams. Located at the foot of the famous Housic Mountain, North Adams is a strategic point to motorists because it marks the beginning of the justly famous Mohawk Trail, which leads over the mountain to Greenfield. So well known has the Mohawk Trail become during the last two or three years that motorists now travel many miles to see it and a continuous stream of motor cars may be seen passing over this road almost any time of the day or night throughout the entire touring season. Turning to the west at North Adams the route leads through the picturesque town of Williamstown, the seat of Williams College. From this point it runs almost due north through Bennington, where occurred the historic battle of Bennington on Aug. 16, 1777, resulting in a decisive defeat of the British by the Continentals.

Best Golf Links.

Next in order comes Manchester, where is located one of the best and most widely known golf links in the country. Many beautiful summer estates are located here and the town was made famous in former years by the visits of Mrs. Abraham Lincoln and Mrs. U. S. Grant.

Rutland, which is the next city of consequence on this route, is widely known as the center of the greatest marble producing region in the country. From the motorist's standpoint Rutland is important chiefly because it marks the point of intersection of two important trunk routes. It is here that the motorist must decide whether he intends to continue on to Burlington or else prefers to strike

west toward the White Mountains by way of Woodstock and White River Junction. There is likewise a very well traveled road running southwest from Rutland to Glen Falls and Lake George. If he decides to continue north he will pass in succession through Brandon, Salisbury, Middlebury and Vergennes over a good gravel road straight to Burlington. Brandon contains the cottage in which Stephen A. Douglas of pre civil war fame was born, while Vergennes marks the site where the fleet on Lake Champlain which stopped the British invasion from Canada was fitted out. Just beyond Salisbury the route passes Lake Dunmore, which is noted as being one of the most beautiful lakes in the whole State of Vermont. Another lake which is very popular among summer visitors is Bomoseen, about 15 miles west of Rutland, and exactly half way between that city and the southern end of Lake Champlain.

Metropolis of Vermont.

Burlington, which marks the terminus

of the route just described, as well as that which leads from the White Mountains, is the metropolis of Vermont and the principal port on Lake Champlain. Historically, it is noted chiefly as the home of Ethan Allen of Revolutionary days. Commercially, the city is important as a center of trade and commerce for that entire region, particularly as a market for lumber. All tourists, bound in either direction between the Adirondacks and the White Mountains must of necessity pass through Burlington, because it is here that the boat is taken across Lake Champlain to either Port Kent, Bluff Point or Plattsburg, on the New York side. It is not absolutely essential that the motorist take the boat at this point, because he has the option of driving north through the islands of Lake Champlain to the short ferry which plies between Isle La Motte and Chazy Landing. This latter trip is a very beautiful one, but, unfortunately, the road is not in very good condition, as compared with many of the other trunk routes in that vicinity.

Turning east from Burlington, the mo-

torist who is bound for the White Mountains will run first to Montpelier, across the northern end of the Green Mountains, and then in a generally easterly direction through St. Johnsbury to the White Mountains. Undoubtedly, the mecca of all tourists in this section of New England is this same White Mountain range. Famous the country over as the premier tourist center of the East, it would be superfluous to attempt here any detailed description of this scenic wonderland. At least a week can very profitably be spent in visiting the numerous points of scenic and historic interest which abound within easy touring radius of this gem of nature's handiwork. The main route from the south enters the White Mountains via Franconia Notch, famous for its Flume and the Old Man of the Mountain, which has been immortalized by the brilliant pen of Hawthorne. The gateway from the east is Crawford Notch, while a short day's trip to the north is Dixville Notch, perhaps the most beautiful of all.

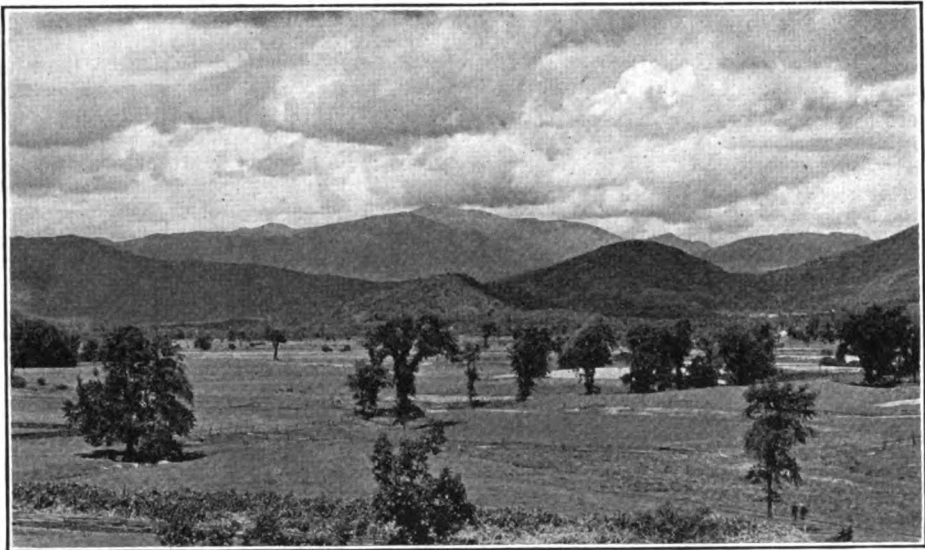
Last to be mentioned, but by no means least from the motorists' standpoint, are the various resorts in the State of Maine. Space forbids more than a cursory mention of those which are best preferred by summer visitors. Poland Spring, Sebago Lake, Rangeley Lake, Moosehead Lake, Belgrade Lake and Bar Harbor are familiar words to tourists the country over. Maine is rapidly forging to the front as a motorists' playground and great strides have been made during the past two

or three years in the way of putting the main traveled routes throughout the state in such shape as to attract the motor tourist. Maine's rugged coast line compares very favorably from a scenic standpoint with the far-famed fjords of Norway, while as a sportsman's paradise this region has no superior.

The subject is such a large one that it has been possible to touch only in a general way on the outstanding features of New England's numerous attractions for the motor tourist. Nevertheless enough has been said to substantiate, I think, the claim which I made in the beginning that this region has no peer as a summer playground.

Great tributes are always paid to the wonderful scenery of New England. One writer stated:

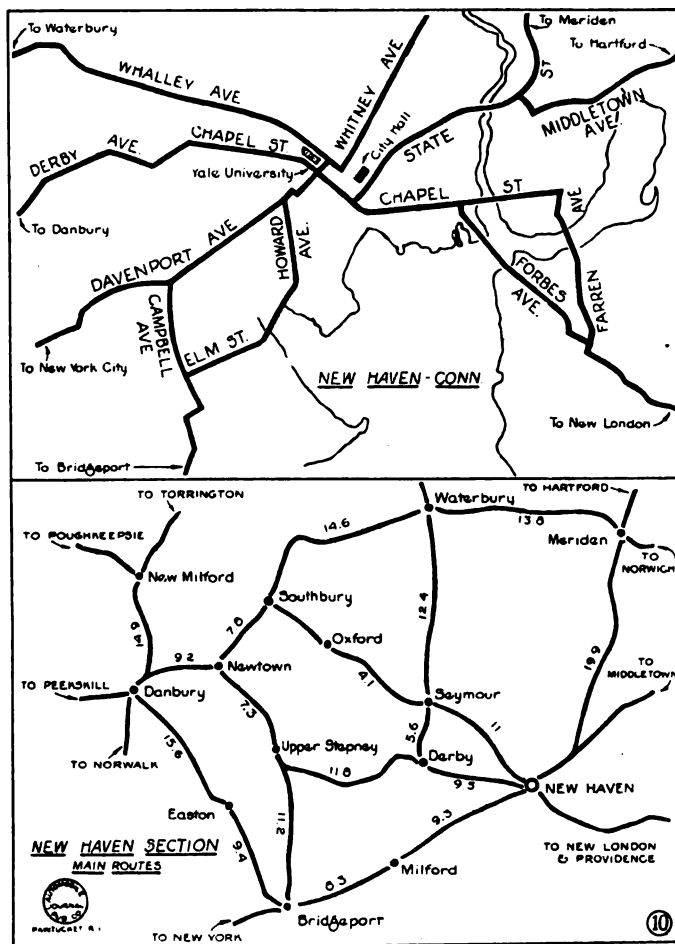
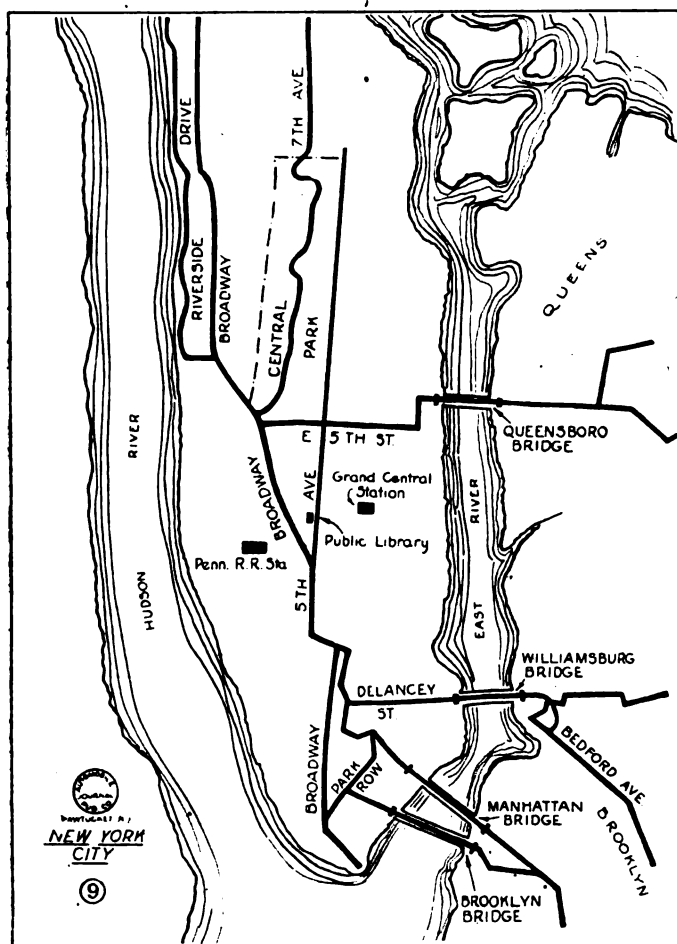
"In short, within this northeasternmost corner of the United States, but one-third the size of France, the tourist may sample the mountain scenery of the Alps and the grandeur of the Rhine—the Italian lakes and the sun-kissed coast of Brittany."



White Mountains, from Bethlehem, N. H.

of the route just described, as well as that which leads from the White Mountains, is the metropolis of Vermont and the principal port on Lake Champlain. Historically, it is noted chiefly as the home of Ethan Allen of Revolutionary days. Commercially, the city is important as a center of trade and commerce for that entire region, particularly as a market for lumber. All tourists, bound in either direction between the Adirondacks and the White Mountains must of necessity pass through Burlington, because it is here that the boat is taken across Lake Champlain to either Port Kent, Bluff Point or Plattsburg, on the New York side. It is not absolutely essential that the motorist take the boat at this point, because he has the option of driving north through the islands of Lake Champlain to the short ferry which plies between Isle La Motte and Chazy Landing. This latter trip is a very beautiful one, but, unfortunately, the road is not in very good condition, as compared with many of the other trunk routes in that vicinity.

NEW ENGLAND ROUTES



NEW YORK TO BOSTON VIA NEW HAVEN.

New York-New Haven.	
Miles	Miles
New York..... 0.0	Norwalk 43.7
New Rochelle... 18.0	Westport 47.0
Larchmont..... 19.8	Southport 51.3
Mamaroneck... 21.4	Fairfield 52.8
Rye..... 25.2	Bridgeport 57.5
Portchester... 26.9	Stratford 61.1
Greenwich..... 29.8	Milford 65.7
Stamford..... 35.0	New Haven..... 75.0
Darien..... 39.2	

New Haven-New London.

Miles	Miles
East Haven..... 4.5	Westbrook 29.2
Brandford..... 7.5	Saybrook 33.4
Gilford..... 16.1	Lyme 36.7
Madison..... 21.0	Flanders 46.0
Clinton..... 24.9	New London... 52.8

New London-Providence.

Miles	Miles
New London..... 0.0	Wakefield 36.6
Groton..... 1.1	Narragansett... 41.2
Mystic..... 7.7	Wickford 52.9
Stonington... 10.7	East Greenwich 60.2
Westerly..... 17.0	Apponaug 62.7
Charlestown... 28.8	Providence.... 72.7

Providence-Boston.

Miles	Miles
Providence..... 0.0	Walpole 25.7
Pawtucket..... 4.3	Norwood 30.0
North Attleboro 12.3	Dedham 34.2
Plainville..... 14.0	Forest Hills... 38.7
Wampum..... 17.4	Boston 44.2
Wrentham..... 18.9	

NEW HAVEN TO BOSTON VIA SPRINGFIELD.

New Haven-Hartford.

Miles	Miles
New Haven..... 0.0	Meriden 19.9
North Haven... 8.1	Berlin 26.1
Wallingford... 13.5	Hartford 37.1

Hartford-Springfield.

Miles	Miles
Hartford..... 0.0	Thompsonville.. 18.6
East Hartford.. 1.9	Long Meadow... 22.2
Warehouse Pt.. 13.4	Springfield... 24.7
Enfield..... 17.5	

Springfield-Worcester.

Miles	Miles
Springfield.... 0.0	Brookfield 32.9
N. Wilbraham.. 9.6	E. Brookfield... 36.3
Palmer..... 15.7	Spencer 39.4
West Warren... 24.0	Leicester 44.3
Warren..... 28.5	Worcester 50.5
W. Brookfield.. 30.2	

Worcester-Boston.

Miles	Miles
Worcester..... 0.0	South Sudbury.. 23.0
Shrewsbury... 5.5	Wayland 26.2
Northboro.... 10.0	Weston 29.7
Marlboro..... 15.3	Boston 43.5

NEW YORK TO DANBURY AND POINTS IN CONNECTICUT.

New York-Danbury.

Miles	Miles
New York..... 0.0	Cross River.... 44.3

White Plains... 23.4	South Salem... 44.5
Armonk..... 31.3	Ridgefield 52.5
Bedford..... 39.3	Danbury 62.0

Danbury-New Haven.

Miles	Miles
Danbury..... 0.0	Huntington 21.0
Bethel..... 3.4	Shelton 24.6
Dodgingtown... 6.5	Derby 24.9
Stepney..... 14.7	New Haven..... 34.5

Danbury-Bridgeport.

Miles	Miles
Danbury..... 0.0	Red Ridge 10.4
Bethel..... 3.4	Easton 16.3
Redding..... 8.5	Bridgeport 25.5

Danbury-Waterbury.

Miles	Miles
Danbury..... 0.0	Southbury 17.0
Newtown..... 9.2	Middlebury 25.9
Sandy Hook.... 10.7	Waterbury 31.6

Danbury-Norwalk.

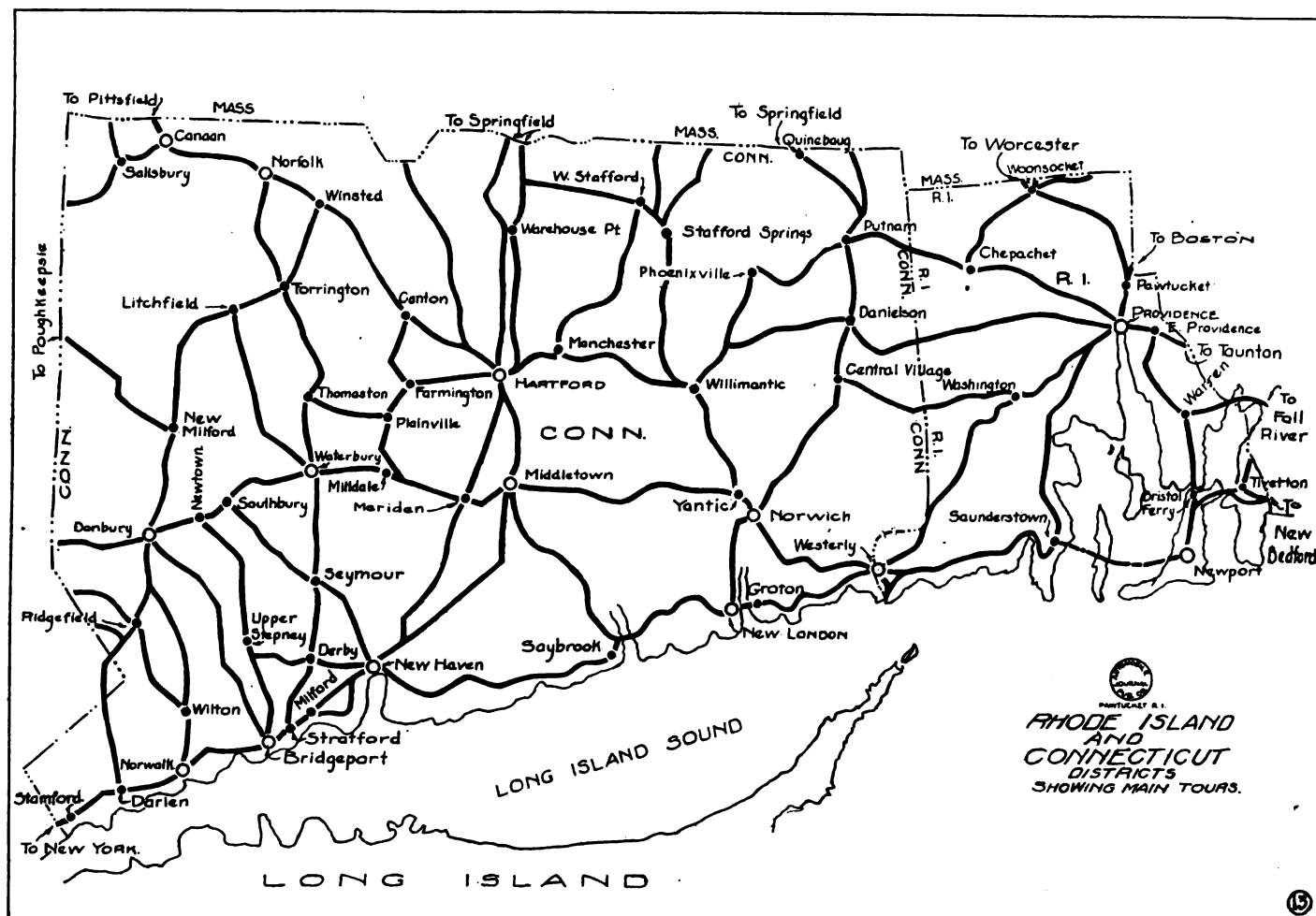
Miles	Miles
Danbury..... 0.0	Norwalk 22.1
Branchville... 10.5	

Danbury-Stamford.

Miles	Miles
Danbury..... 0.0	Glenbrook 26.6
Lewisboro..... 13.8	Stamford 28.5
New Canaan... 20.7	

Waterbury-Hartford.

Miles	Miles
Waterbury..... 0.0	Plainville 16.7
Marion..... 6.7	Farmington 21.3
Milldale..... 8.1	Hartford 30.4
Southington... 11.9	



NEW YORK TO WHITE MOUNTAINS VIA GREENFIELD.

New York-Pittsfield.

Miles		Miles
New York.....	0.0	Wassale 90.0
Yonkers.....	14.0	Amenia 93.5
Dobbs Ferry.....	19.2	Millerton 102.5
Tarrytown.....	24.2	Lakeville 106.4
Briarcliff.....	30.9	Salisbury 107.9
Yorktown H'ths.....	41.6	S. Egremont..... 121.4
Carmel.....	57.4	Great Bar'gton 125.0
Patterson.....	65.8	Stockbridge 132.4
Pawling.....	70.5	Lenox 138.3
South Dover.....	78.3	Pittsfield 145.0

Pittsfield-Greenfield.

Miles		Miles
Pittsfield.....	0.0	Goshen 30.5
Dalton.....	6.4	Williamaburg.. 36.3
Windsor.....	12.5	Haydenville .. 38.6
Cummington.....	24.2	Northampton .. 44.5
Lithia.....	28.6	Greenfield 64.5

Greenfield-White River Junction.

Miles		Miles
Greenfield.....	0.0	Charlestown .. 51.5
Bernardston.....	6.0	Claremont 62.5
Guilford.....	17.6	W. Claremont.. 65.2
Brattleboro.....	20.5	Ascutneyville.. 67.4
Putney.....	30.0	Windsor 72.6
Westminster.....	38.6	Hartland 77.4
Bellows Falls.....	44.0	W. River Junc. 87.5

White River Junction-White Mountains.

Miles		Miles
W. River Junc.....	0.0	Woodsville 44.7
W. Lebanon.....	0.6	Bath 45.9
Hanover.....	4.5	Lisbon 51.6
Lyme.....	15.2	Littleton 62.3
Orford.....	22.3	Bethlehem 67.2
Piermont.....	28.3	White Mts. 75.5
Haverhill.....	33.5	(Twin Mtn. H. 75.5)

NEW YORK TO WHITE MOUNTAINS VIA BURLINGTON.

Pittsfield-Rutland.

Miles		Miles
Pittsfield.....	0.0	Manchester 58.5
Lanesboro.....	5.3	Manchester C. 59.8
Williamstown.....	21.5	E. Dorset..... 65.1
Bennington.....	35.5	Danby 72.8
Shaftsbury.....	43.2	Wallingford..... 82.1
Arlington.....	50.4	Rutland 92.5

Pittsfield-Keene.

Miles		Miles
Pittsfield.....	0.0	Stamford 28.5
Cheshire.....	10.7	Heartwell, V. ... 34.1
Adams.....	15.8	Searsburg 40.2
North Adams.....	22.0	Keene 86.0

Pittsfield-Burlington.

Miles		Miles
Pittsfield.....	0.0	Hampton 89.2
Manchester.....	58.5	Fair Haven..... 94.0
Man. Cen. P. O.....	59.8	Castleton Cor.. 97.0
Dorset.....	66.0	Hubbardton..... 104.1
E. Rupert.....	68.0	Sudbury 110.4
Pawlet.....	74.5	Cornwall 122.8
N. Pawlet.....	78.0	Middlebury 129.5
Wells.....	80.4	Burlington 161.5
Poultney.....	88.2	

Burlington-White Mountains.

Miles		Miles
Burlington.....	0.0	W. Danville..... 65.3
Williston.....	7.8	Danville 68.2
Richmond.....	12.7	St. Johnsbury.. 75.5
Waterbury.....	26.5	Watford 88.3
Montpelier.....	38.5	Littleton 93.8
E. Montpelier.....	45.5	Bethlehem 98.9
Plainfield.....	48.6	White Mts. 107.0
Marshfield.....	55.1	(Twin M. H.) 107.0
E. Cabot.....	62.0	

OPTIONAL ROUTES.

Rutland-White River Junction.

Miles		Miles
Rutland.....	0.0	Bridgewater ... 25.2

Mendon.....	4.2	Woodstock 31.7
Sherburne.....	13.4	Taftsville 35.0
W. Bridgewater.....	17.7	Quechee 38.6
Bridgew'r Crn.....	23.7	W. R. Junction 45.0

Rutland-Lake George.

Miles		Miles
Rutland.....	0.0	Comstock 33.4
W. Rutland.....	3.7	Fort Ann 37.4
Castleton.....	11.0	Hudson Falls... 46.4
Castleton Crs.....	12.6	Glenns Falls... 50.0
Fair Haven.....	16.0	Lake George... 59.0
White Hall.....	26.2	

BOSTON TO WHITE MOUNTAINS.

Boston-Concord.

Miles		Miles
Boston.....	0.0	Nashua 43.5
Winchester.....	11.5	Reeds Ferry... 53.0
Woburn.....	13.7	Manchester 62.0
Wilmington.....	18.9	Suncook 73.0
Tewksbury.....	24.7	Pembroke 74.6
Lowell.....	29.5	Concord 80.5
Tyngaboro.....	37.1	

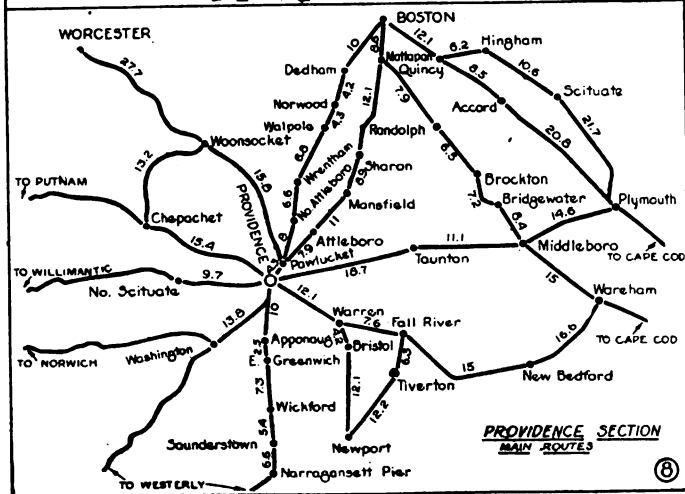
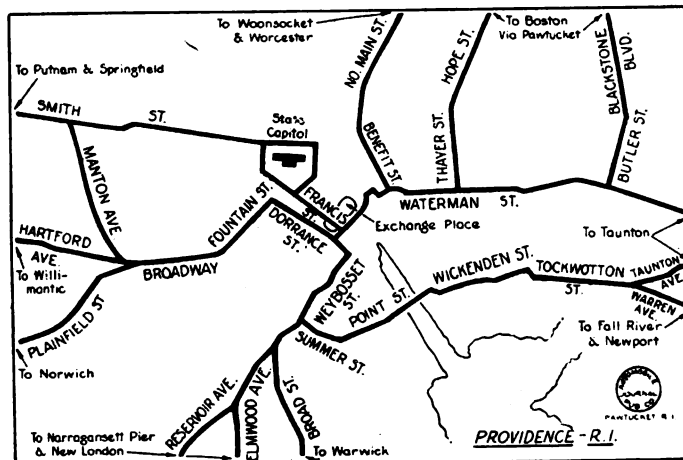
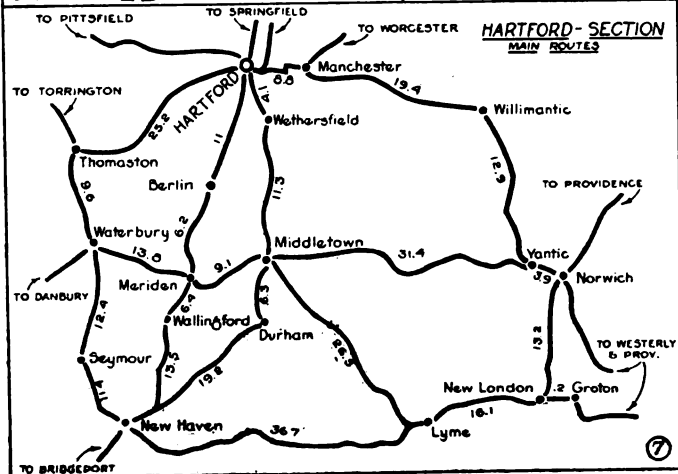
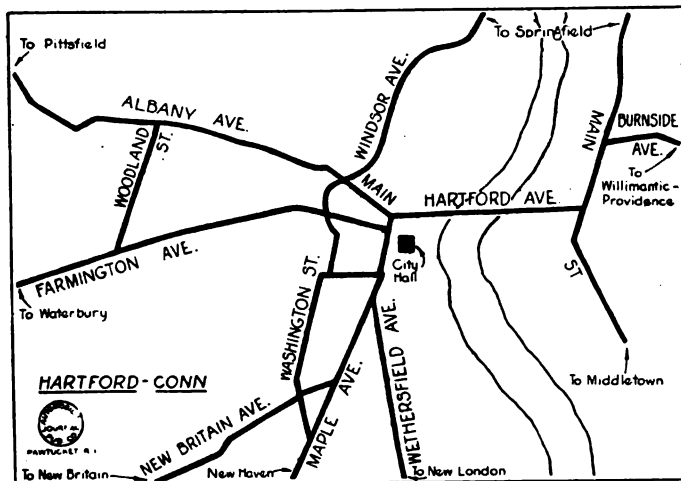
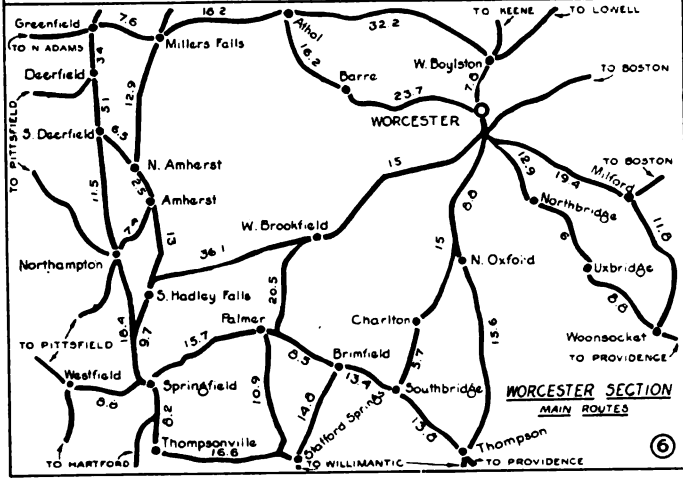
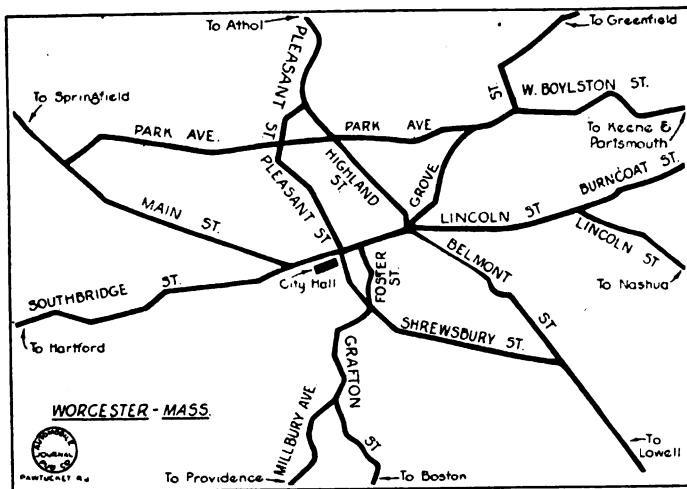
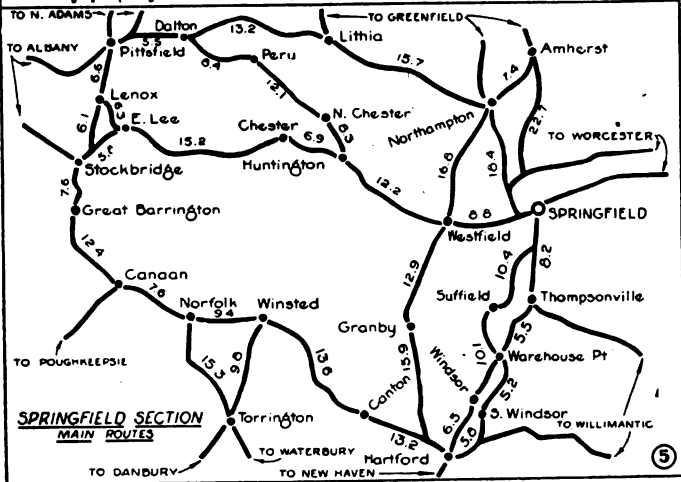
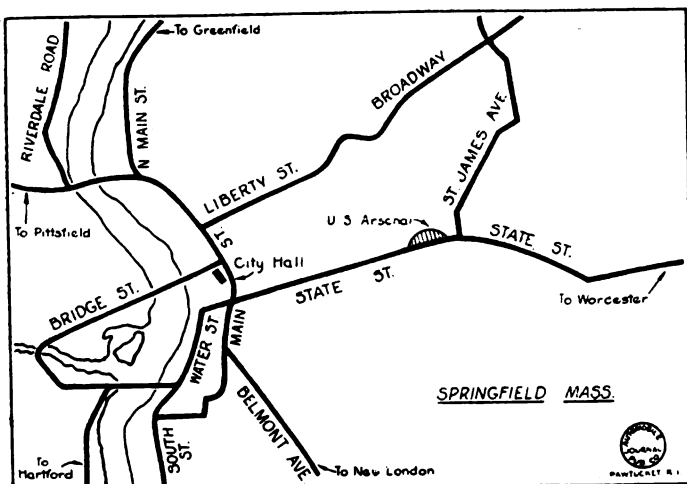
Concord-White Mountains.

Miles		Miles
Concord.....	0.0	Holderness 50.3
Penacook.....	6.1	Ashland 54.3
Boscawen.....	8.8	Plymouth 60.0
Franklin.....	18.5	Woodstock..... 77.0
Tilton.....	22.0	N. Woodstock.. 81.0
Winnisquam.....	28.5	Flue House..... 86.0
Laconia.....	31.3	Profile House... 91.0
Lakeport.....	33.0	White Mts. 104.5
Wiers.....	37.5	(Twin M. H.) 104.5
Meredith.....	42.4	

Boston-Portsmouth.

Miles		Miles
Boston.....	0.0	Rawley 38.2
Revere Beach.....	11.1	Newbury 42.5
Lynn.....	15.0	Newburyport ... 46.0
Salem.....	21.5	Salisbury 48.6
Beverly.....	23.1	Smithtown 51.3
Wenham.....	28.0	Hampton Falls.. 54.2
Hamilton.....	30.0	Rye Beach 62.3
Ipswich.....	34.3	Portsmouth..... 73.5

(Continued on Page 31.)



(Continued from Page 28.)

Portsmouth-White Mountains.

Miles	Miles
Portsmouth..... 0.0	Conway..... 90.5
Dover..... 11.5	N. Conway..... 96.0
Summersworth..... 16.3	Intervale..... 87.8
Rochester..... 23.0	Glen..... 91.5
Milton..... 31.0	Bartlett..... 96.0
Union..... 37.0	Bemis..... 104.0
Sanboraville..... 42.0	Crawf'd House..... 112.6
Wakefield..... 43.0	Bretton Woods..... 115.9
Ossipee..... 53.0	Fabyana..... 116.5
W. Ossipee..... 64.5	White Mts. (Twin M. H.)..... 121.0
Chocorua..... 68.5	

PORTSMOUTH TO WHITE MOUNTAINS VIA POLAND SPRINGS.**Portsmouth-Portland.**

Miles	Miles
Portsmouth..... 0.0	Ogunquit..... 19.0
Kittery..... 1.1	Wells..... 24.5
York Cor..... 7.6	Kennebunk..... 28.0
York..... 8.5	Blddeford..... 38.5
York Harbor..... 9.5	Saco..... 39.5
York Beach..... 13.2	Dunstan..... 45.1
Cape Neddick..... 15.0	Portland..... 54.0

Portland-Poland Springs and White Mountains.

Miles	Miles
Portland..... 0.0	Redstone..... 78.3
Gray..... 17.0	N. Conway..... 81.5
Dry Mills..... 19.6	Intervale..... 83.4
Poland Springs..... 27.5	Glen..... 87.3
Poland..... 30.5	Bartlett..... 93.5
Webbs Mills..... 39.1	Bemis..... 99.5
Cooks Mills..... 43.0	Crawf'd House..... 106.1
Naples..... 46.7	Bretton Woods..... 111.4
Bridgton..... 55.1	Fabyana..... 112.0
E. Fryeburg..... 64.9	White Mts. (Twin M. H.)..... 116.5
Fryeburg..... 70.9	
Conway..... 75.6	

PORTLAND TO FT. KENT VIA BANGOR.**Portland-Rockland.**

Miles	Miles
Portland..... 0.0	Newcastle..... 54.1

Yarmouth..... 11.9	Damariscotta..... 54.5
Freeport..... 11.7	Waldoboro..... 64.3
Brunswick..... 26.5	West Warren..... 71.3
Woolwich..... 35.7	Thomaston..... 76.7
Wiscasset..... 45.0	Rockland..... 81.0
N. Edgecomb..... 46.7	

Rockland-Bangor.

Miles	Miles
Rockland..... 0.0	Stockton..... 37.2
Rockport..... 6.4	Prospect..... 41.7
Camden..... 8.0	Frankfort..... 45.7
Northport..... 19.0	Hampden..... 55.8
Belfast..... 27.0	Bangor..... 62.0
Searsport..... 33.0	

Bangor-Houlton.

Miles	Miles
Bangor..... 0.0	Lincoln..... 49.0
Orono..... 8.0	Matawamkeag..... 63.0
Oldtown..... 13.0	Macwahoc..... 72.5
Passadumkeag..... 32.0	Haynesville..... 92.5
West Enfield..... 37.0	Houlton..... 117.0

Houlton-Fort Kent.

Miles	Miles
Houlton..... 0.0	North Lenton..... 60.5
Middleton..... 7.3	Van Buren..... 76.2
Monticello..... 12.8	Grand Isle..... 91.7
Blaine..... 26.5	Madawaska..... 100.5
Presque Isle..... 41.5	Fort Kent..... 120.5
Caribou..... 54.2	

OPTIONAL TRIPS.**Bangor-Skowhegan.**

Miles	Miles
Bangor..... 0.0	Newport..... 26.2
Heron..... 7.5	Pakmyra..... 30.6
Carmel..... 14.7	Canaan..... 42.5
Etna..... 18.0	Skowhegan..... 51.0

Skowhegan-Rangeley.

Miles	Miles
Skowhegan..... 0.0	Dead River..... 43.0
Lakewood..... 5.7	Flagstaff..... 52.1
North Anson..... 12.5	Stratton..... 63.1

N. New Portl'd..... 21.1	Rangeley..... 83.0
Lexington..... 29.5	

Bar Harbor-Portland.

Miles	Miles
Bar Harbor..... 0.0	Orland..... 37.0
Ellsworth..... 19.8	Bucksport..... 39.7
East Orland..... 33.3	Prospect..... 40.6
Portland..... 166.0	

Portland-Augusta.

Miles	Miles
Portland..... 0.0	Lewiston..... 33.6
Gray..... 17.0	Greene..... 42.0
Up. Gloucester..... 24.5	Winthrop..... 54.5
Danville June..... 27.7	Manchester..... 60.6
Auburn..... 33.4	Augusta..... 65.0

PORTLAND TO RANGELEY VIA AUGUSTA.**Portland-Rangeley.**

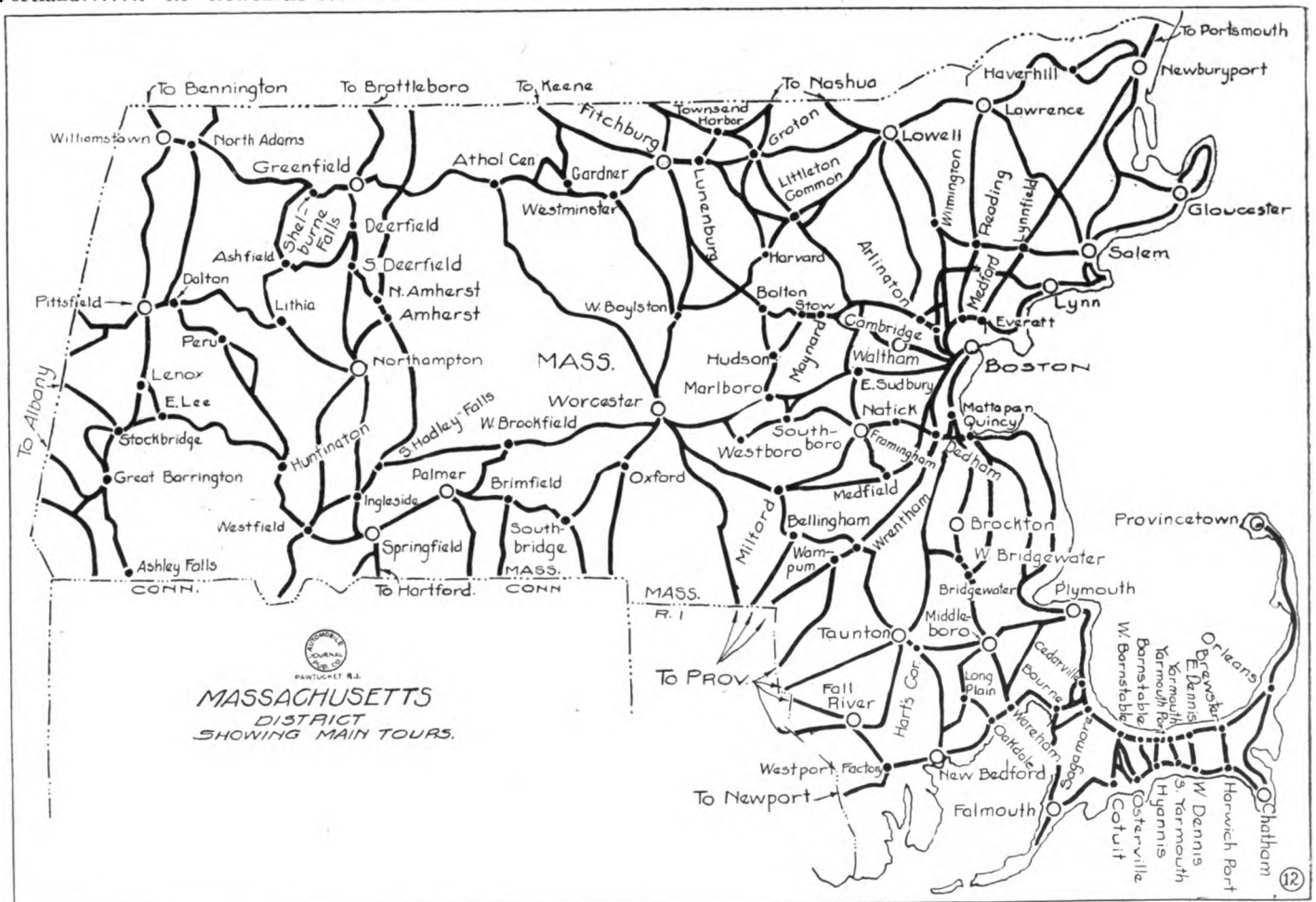
Miles	Miles
Portland..... 0.0	Howes Corner..... 50.1
Gray..... 17.0	Norlands..... 55.1
Up. Gloucester..... 24.5	Livermore Falls..... 60.2
Danville June..... 27.7	North Jay..... 66.6
Auburn..... 33.4	Wilton..... 69.7
E. Auburn..... 36.5	Farmington..... 77.2
Rangeley..... 119.0	

MOOSEHEAD ROUTE VIA AUGUSTA. Augusta-Moosehead.

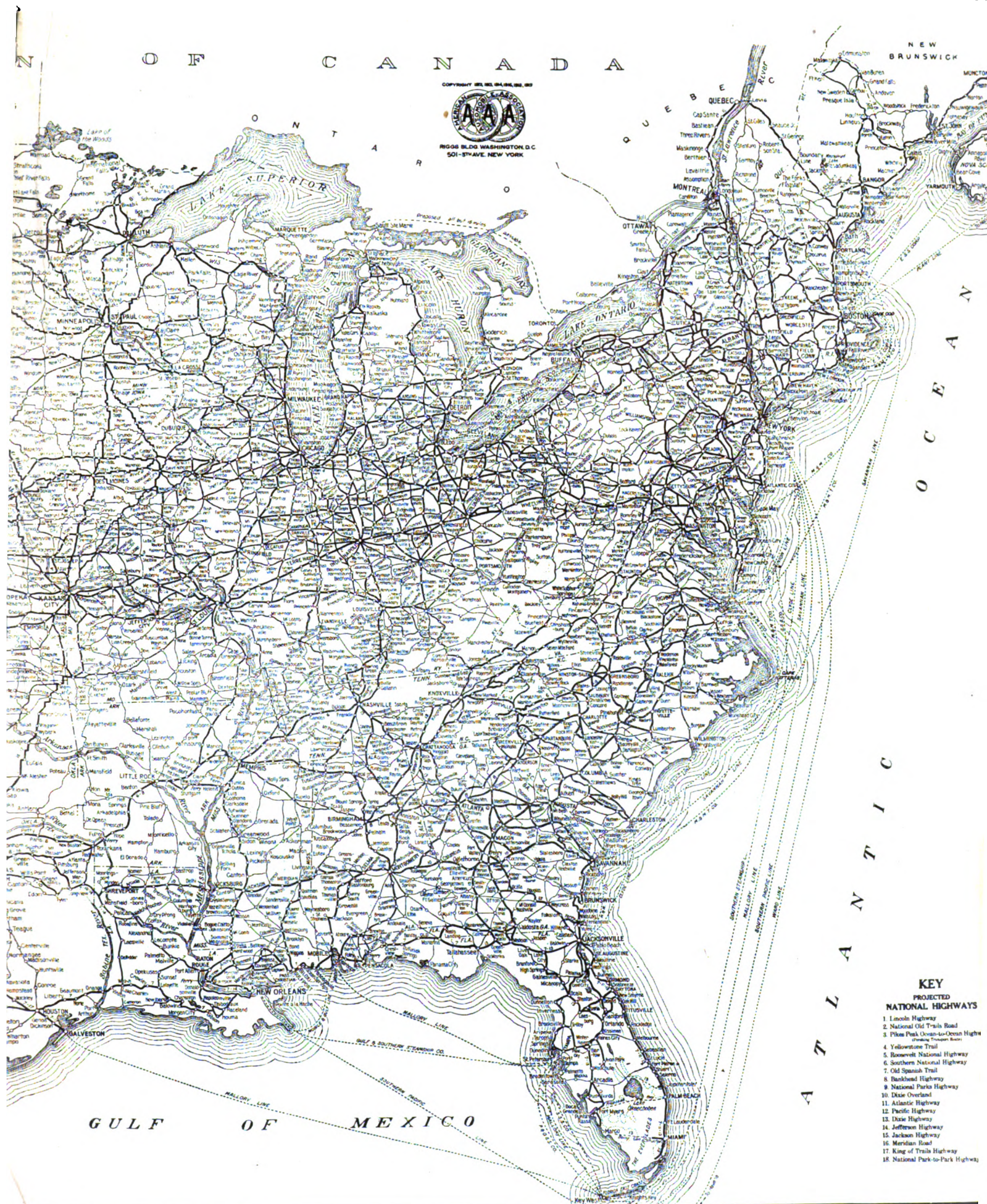
Miles	Miles
Augusta..... 0.0	Athens..... 49.0
Vassalboro..... 11.7	Brighton..... 57.5
Waterville..... 19.5	Kingsbury..... 63.4
Fairfield Centre..... 23.0	Greenville..... 90.8
Skowhegan..... 36.0	Greenville June..... 92.5
North Cornville..... 47.0	

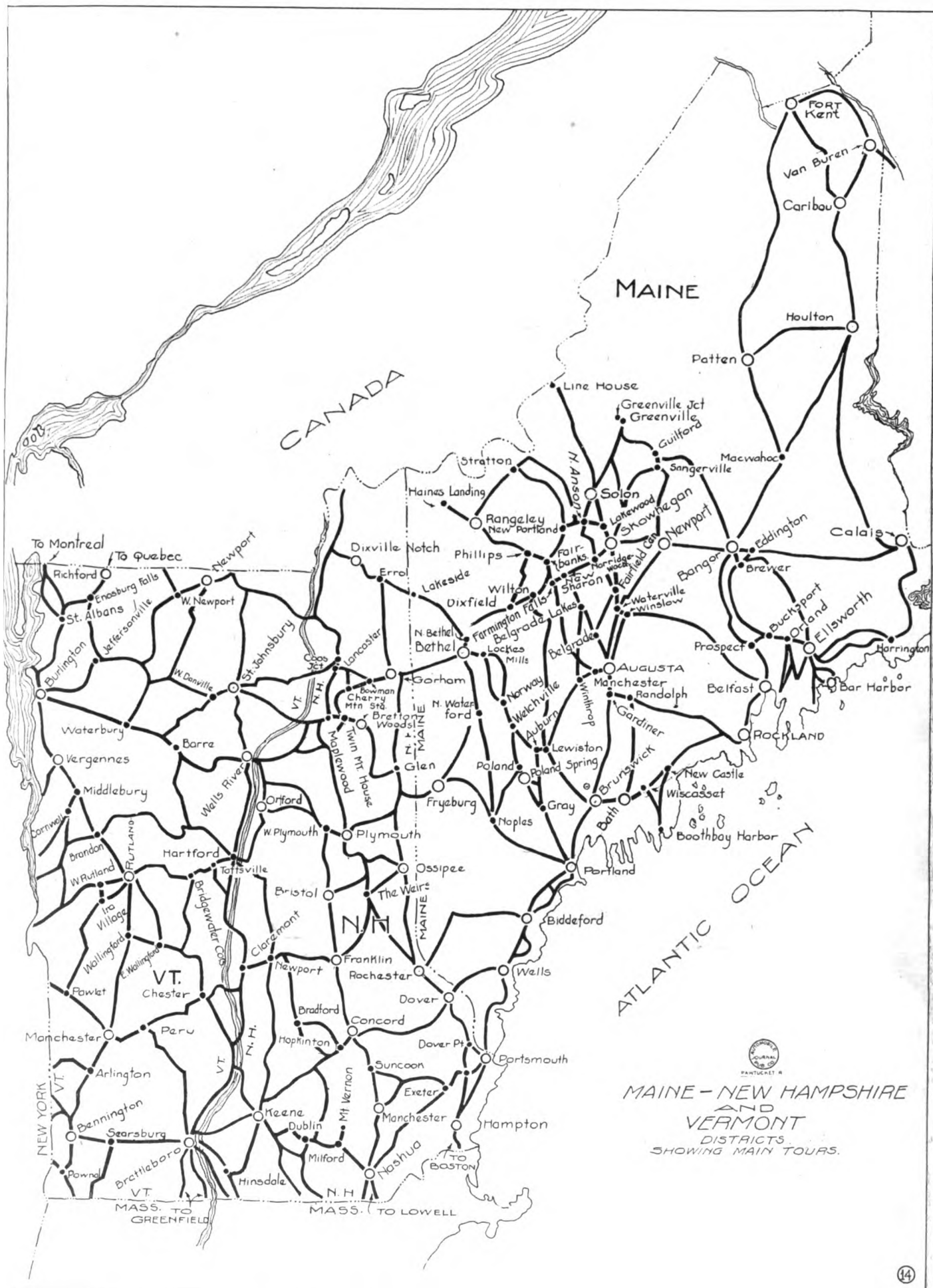
(Boats to Moosehead.)

(Continued on Page 35.)









(Continued from Page 31.)

CAPE TRIPS FROM BOSTON.**Boston-Falmouth.**

Miles	Miles
Boston..... 0.0	Tremont..... 48.8
Randolph..... 15.8	Wareham..... 52.0
Avon..... 18.2	Onset..... 56.3
Brockton..... 22.0	Bourne..... 60.5
W. Bridgewater..... 26.5	Monument B'ch..... 62.4
Bridgewater..... 29.3	West Falmouth..... 71.5
Middleboro..... 37.5	Falmouth..... 75.5

Falmouth-Chatham.

Miles	Miles
Falmouth..... 0.0	Centreville..... 21.2
Waqoilt..... 6.6	Hyannis..... 25.1
Mashpee..... 11.7	S. Yarmouth..... 30.6
Santuit..... 13.6	S. Harwich..... 38.3
Marston Mills..... 15.7	Chatham..... 43.5
Osterville..... 18.3	

Chatham-Provincetown.

Miles	Miles
Chatham..... 0.0	Wellfleet..... 22.0
Orleans..... 9.5	Truro..... 26.7
Eastham..... 13.0	Provincetown..... 36.5

Provincetown-Providence.

Miles	Miles
Provincetown..... 0.0	Onset..... 69.6
Truro..... 9.7	Wareham..... 74.0
Wellfleet..... 14.5	Marion..... 79.2
Eastham..... 23.4	Mattapoisett..... 84.0
Orleans..... 27.0	Fairhaven..... 90.0
Brewster..... 32.6	New Bedford..... 91.0
Dennis..... 39.2	Westport Fact'y..... 97.5
Yarmouth..... 42.5	Fall River..... 102.5
Barnstable..... 46.5	Swansea..... 109.1
Sandwich..... 58.8	Seekonk..... 119.4
W. Sagamore..... 61.0	Providence..... 124.0

Boston-Plymouth.

Miles	Miles
Boston..... 0.0	Greenbush..... 29.6
Forest Hills..... 5.7	Marshfield Cen..... 35.3
Quincy..... 13.0	Marshfield..... 37.7
Hingham..... 17.3	Kingston..... 45.9
Cohasset..... 23.9	Plymouth..... 50.5
North Scituate..... 26.0	

Boston-Newport, R. I.

Miles	Miles
Boston..... 0.0	Dighton..... 41.8

Forest Hills..... 5.7	Somerset..... 45.1
Punkapoag..... 14.0	Fall River..... 50.8
Stoughton..... 19.1	Tiverton..... 57.3
Taunton..... 26.4	Newport..... 69.5

Providence-Newport, R. I.

Miles	Miles
Providence..... 0.0	Bristol Ferry..... 16.7
Warren..... 12.2	Newport..... 28.5
Bristol..... 16.0	

MOHAWK TRAIL FROM BOSTON.**Boston-Greenfield.**

Miles	Miles
Boston..... 0.0	Westminster..... 54.3
Cambridge..... 0.8	Gardner..... 58.8
Lexington..... 11.4	Otter River..... 63.4
Concord..... 11.5	Baldwinville..... 64.6
North Acton..... 25.0	Athol..... 74.7
Littleton..... 27.8	Orange..... 79.3
Littleton Center..... 28.6	Erving..... 84.3
Ayer..... 34.7	Millers Falls..... 90.6
Lunenburg..... 43.0	Turners Falls..... 94.8
Fitchburg..... 47.0	Greenfield..... 98.0

Greenfield-Albany.

Miles	Miles
Greenfield..... 0.0	N. Bownal..... 49.8
Shelburne..... 5.4	N. Petersburg..... 53.5
Shelburne Falls..... 9.0	Petersburg..... 59.0
Charlemont..... 17.5	Brunswick Cor..... 74.7
North Adams..... 36.5	Troy..... 79.5
Williamstown..... 41.5	Albany..... 85.0
Bownal..... 46.9	

ROUTES TO CANADA.**Burlington-Montreal.**

Miles	Miles
Burlington..... 0.0	Rouses Point..... 48.5
Winoaki..... 2.1	Lacolle..... 56.8
Colchester..... 6.2	Napierville..... 64.8
South Hero..... 18.1	Douglas Corner..... 67.1
Grand Isle..... 24.5	St. Jacques..... 72.8
North Hero..... 31.1	Laprairie..... 85.1
Alburg Passage..... 36.7	Montreal..... 94.0
Alburg..... 45.1	

Burlington-Newport, Vt.

Miles	Miles
Burlington..... 0.0	Johnson..... 38.0
Winoaki..... 2.1	N. Hyde Park..... 43.5
Essex Junction..... 6.5	Eden..... 47.6
Essex..... 9.8	Lowell..... 57.7
Jerico..... 12.9	Westfield..... 64.3
Underhill..... 16.2	Troy..... 66.3
Cambridge..... 26.4	Newport..... 77.0
Jeffersonville..... 29.0	

Newport-Quebec, P. Q.

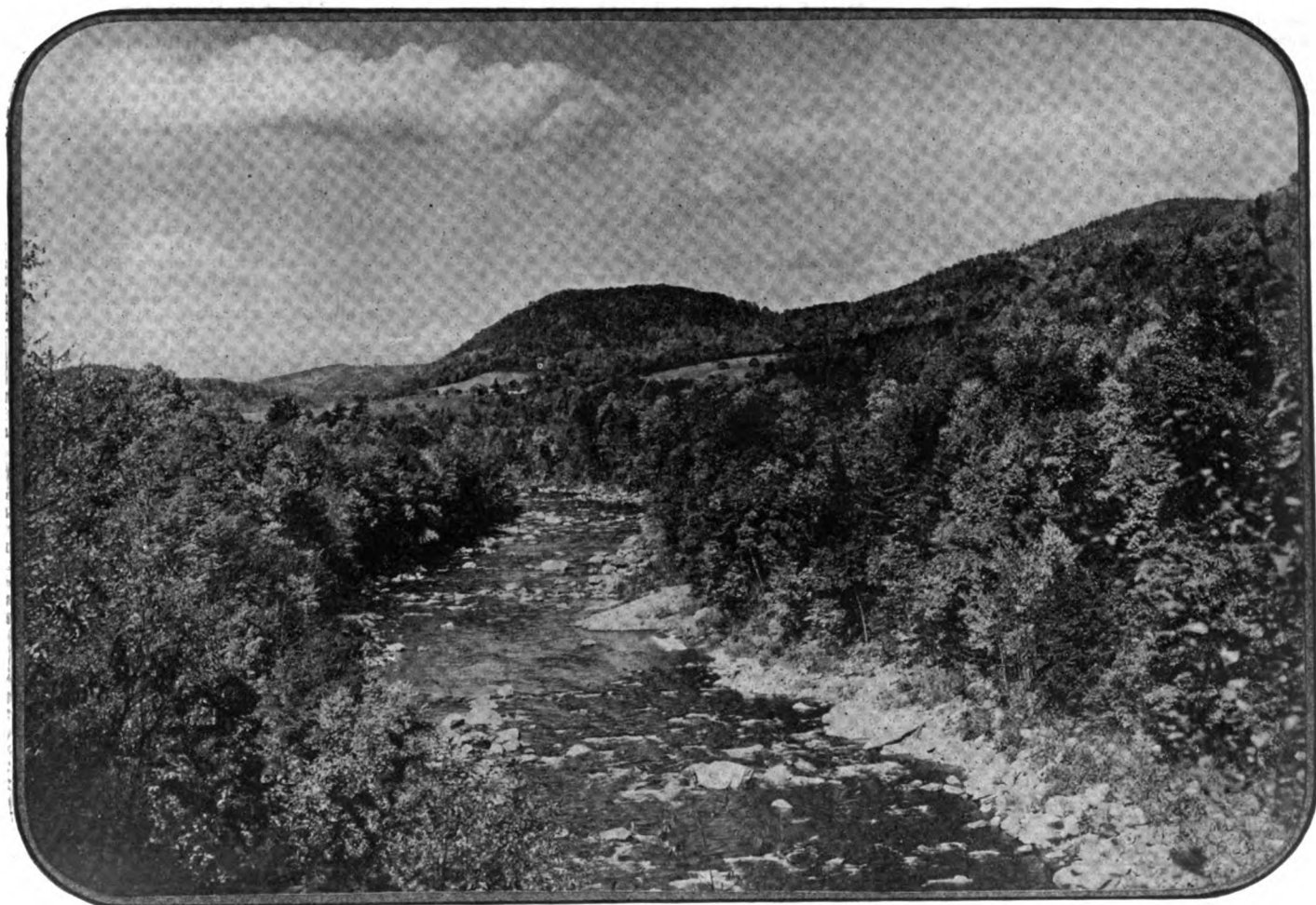
Miles	Miles
Newport..... 0.0	D'Israeli..... 95.5
West Derby..... 0.9	Colraine..... 100.9
Derby Line..... 8.2	Black Lake..... 106.9
Rock Island..... 8.5	Thetford Mines..... 111.7
Stanstead..... 9.8	Robertson..... 117.3
Massawippi..... 22.2	Broughton..... 123.3
Waterville..... 32.1	Young Junct'n..... 133.2
Lenoxville..... 39.3	St. Joseph..... 141.1
Sand Hill..... 45.7	Beauce Junct'n..... 146.3
Birchton..... 49.4	St. Marie..... 152.8
Cookshire..... 52.4	Scott..... 158.0
Angus..... 58.4	St. Maxime..... 158.6
Marbleton..... 70.6	St. Henri..... 172.5
Wedon..... 79.7	St. Louis..... 177.6
Wedon Lake..... 83.9	Levis..... 183.0
Garthby..... 90.3	Quebec..... 183.5

Burlington-Richford.

Miles	Miles
Burlington..... 0.0	Enosburg Falls..... 51.0
Milton..... 19.6	Sampsonville..... 55.0
Georgia..... 26.2	East Berkshire..... 56.2
St. Albans..... 32.1	Richford..... 60.8
Sheldon Springs..... 41.8	

Richford, Vt.-Quebec.

Miles	Miles
Richford..... 0.0	Danville..... 72.0
Abercorn..... 3.0	Warwick..... 83.7
Sutton Flat..... 9.0	Arthabaska..... 92.0
Sutton Junction..... 12.0	Stanford..... 105.0
Brome..... 16.0	Plessisville..... 110.7
Knowlton..... 20.0	St. Julie..... 120.0
Waterloo..... 30.0	St. Agathe..... 136.0
Warden..... 37.0	St. Guiles..... 145.0
Lawrenceville..... 41.0	Craig's Rd. Sta..... 154.0
Racine..... 48.0	St. Romauld..... 170.0
Melbourne..... 60.0	Levis..... 176.0
Richmond..... 61.0	Quebec..... 176.5



A Vista Through the Woods in the Valley of Deerfield River. A Scene from the Highway in Western Massachusetts.

THE ADIRONDACK TRAIL

THE Adirondack Trail winds up through the rolling hills of the Berkshires and into the rugged mountains of the Adirondacks, reaching almost to the Canadian line before turning southwest to Rochester. Then swinging down across New York state the route continues eastward along the southern tier, finally striking the Hudson river again at Nyack and returning to New York City.

With New York City as the starting point, the tourist proceeds through the city and follows the Hudson river, through Yonkers, Hastings, Dobbs Ferry and Irvington, leaving the river at Scarborough. The route then turns inland and passes through Briarcliff, crosses the Pines Bridge and continues on through Yorktown Heights to Lake Mahopac, which is a charming spot in the foothills of the Berkshires.

The train then runs practically north through Amenia and Millerton before crossing a corner of Connecticut and entering Massachusetts. Great Barrington, Stockbridge and Lenox are especially attractive places, being among the most beautiful sections of the Berkshires.

The route turns at Pittsfield in an easterly direction and crosses the state line into New York and thence to Albany, where the trail turns north through Newtonville and other small towns. Saratoga Springs is the next place of importance. This is the county seat of Saratoga county, and is one of the most popular resorts in New York state. Saratoga Springs is now a state reservation. The medicinal properties of its waters have added to its fame. There are state bath houses and beautiful parks there.

At Foot of Adirondacks.

Leaving Saratoga Springs, the tourist proceeds north to Glens Falls, which is at the foot of the Adirondacks. The

route then turns past Lake George to Chestertown. Through this section the country is mountainous and beautiful. The motorist need have nothing to fear, as the roads are of good macadam.

Passing Schroon Lake the motorist goes almost directly north to Keene and then west to Lake Placid. The next part of the tour is west on a winding but delightfully smooth road into the village of Saranac Lake.

The course now proceeds northerly again, through a very wild part of the Adirondacks.

New York-Pittsfield.

Miles	Miles
N. Y. (Madison ave. & 43d st.) 0.0	Carmel 58.6
Yonkers 14.4	Patterson 68.2
Hast-on-Hud. 17.9	Pawling 71.8
Dobbs Ferry... 18.9	S. Dover..... 79.6
Irvington 21.4	Dover Plains.. 85.8
Tarrytown 24.1	Wassau 91.4
Scarboro 28.3	Amenia 94.8
(Onondaga Trail starts here.)	Millerton 103.6
Briarcliff 31.9	Lakeville, Ct.. 106.9
Kitchawan 38.0	S. Egremont P. O., Mass. 121.6
Croton Lake St. 38.3	G. Barrington. 125.6
Yorktown Hts. 42.7	Stockbridge ... 133.0
Amawalk Sta. 44.4	Lenox 139.8
Baldw'n P. P. O. 49.4	Pittsfield 146.4
Lake Mahopac. 53.0	

Pittsfield, Mass.-Saratoga Springs.

Miles	Miles
Pittsfield..... 0.0	Loudenville ... 40.7
Shaker Village. 4.5	Newtonville ... 42.0
New Lebanon... 10.8	Lathams cors. 43.8
N. Leb. Center. 12.2	Cohoes 48.2
West Lebanon. 14.9	Waterford 50.1
Nassau 23.5	Mechanicville. 58.9
E. Greenbush.. 30.8	Maltaville 64.8
Rensselaer 35.2	Malta 67.0
Albany 36.0	Saratoga Spgs. 75.1

Saratoga-Schroon Lake.

Miles	Miles
Saratoga 0.0	Warrensburg... 34.2
Wilton 7.4	Chestertown... 46.2
S. Glen Falls.. 17.8	Pottersville... 55.0
Glen Falls.... 18.7	Taylorson- Schroon 58.7
French Mount. 24.0	Schroon Lake... 54.3
Lake George... 28.1	

Schroon Lake-Lake Placid.

Miles	Miles
Schroon Lake... 0.0	Jay 53.3
Schroon River.. 9.3	Wilmington ... 58.0
Euba Mills 21.4	Wilm'ton Notch 58.4
Elizabethtown. 31.5	Newman 70.8
Keene 43.6	Lake Placid... 71.4
Upper Jay..... 49.7	

Lake Placid-Malone.

Miles	Miles
Lake Placid.... 0.0	McColloms 28.4
Saranac Lake... 9.5	Duane Center.. 40.3
Gabriel Sta.... 18.3	Whippleville .. 54.2
Brighton 20.7	Malone 57.6
Paul Smith's.. 21.8	

Malone-Watertown.

Miles	Miles
Malone 0.0	De Kalb Jet... 60.4
N. Bangor..... 5.3	Old De Kalb... 64.4
Brushton 10.9	Richville..... 72.0
Moira 13.1	Gouverneur ... 78.5
Lawrenceville.. 18.6	Somerville 86.1
Nicholville ... 24.9	Antwerp 90.8
Hopkinton 27.2	Theresa 102.3
Potsdam 41.5	Pamella 112.3
Watertown 43.5	Watertown 120.9
Eddy 57.3	

Watertown-Oswego.

Miles	Miles
Watertown 0.0	Pulaski 31.7
Adams Center.. 10.0	Maple View.... 39.4
Adams 13.6	Mexico 43.7
Pierrepont Man. 19.4	New Haven 48.4
Mannsville 21.0	Scriba 54.4
Sandy Creek... 26.0	Oswego 58.6

Oswego-Rochester.

Miles	Miles
Oswego 0.0	Williamson ... 48.1
Sterling Center 12.7	Ontario 53.1
Red Creek..... 21.3	Ontario Center 54.4
Wolcott 27.0	Fruitland P. O. 56.9
Alton 36.8	Union Hill.... 57.9
Wallington Sta. 38.6	Webster 60.8
Sodus 41.3	W. Webster... 64.1
E. Williamson.. 45.6	Rochester..... 72.1

Rochester-Watkins.

Miles	Miles
Rochester 0.0	Stanley 42.0
Pittsford..... 7.6	Halls Corners.. 45.6
Mendon 14.1	Benton Center. 50.6
Victor 19.4	Penn Yan..... 54.6
Canandaigua... 29.8	Dundee 66.6
Hopewell 37.3	Reading Center 74.6
Flint 39.3	Watkins 79.7

Watkins-Elmira.

Miles	Miles
Watkins 0.0	Horseheads ... 16.4
Montour Falls. 2.9	Elmira Hts. Sta. 19.1
Millport 9.3	Elmira 22.2
Pine Valley.... 12.0	

Elmira-Binghamton.

Miles	Miles
Elmira 0.0	Owego 36.2
Lowman 6.5	Apalachia 43.3
Chemung 12.4	Vestal 49.5
Waverly 17.1	Union 50.2
Fork 17.9	Endicott 52.4
Barton 23.8	Johnson City.. 56.0
Smithboro 26.5	Binghamton... 58.6
Tioga Center.. 30.5	

Binghamton-Liberty.

Miles	Miles
Binghamton... 0.0	Horton 63.5
Windsor 15.6	Cook's Falls... 66.2
Damascus 17.9	Roscoe 72.0
Deposit 31.0	Livingston Man. 78.8
Hale Eddy..... 35.9	Parksville Sta. 84.2
Hancock 44.3	Liberty 88.2

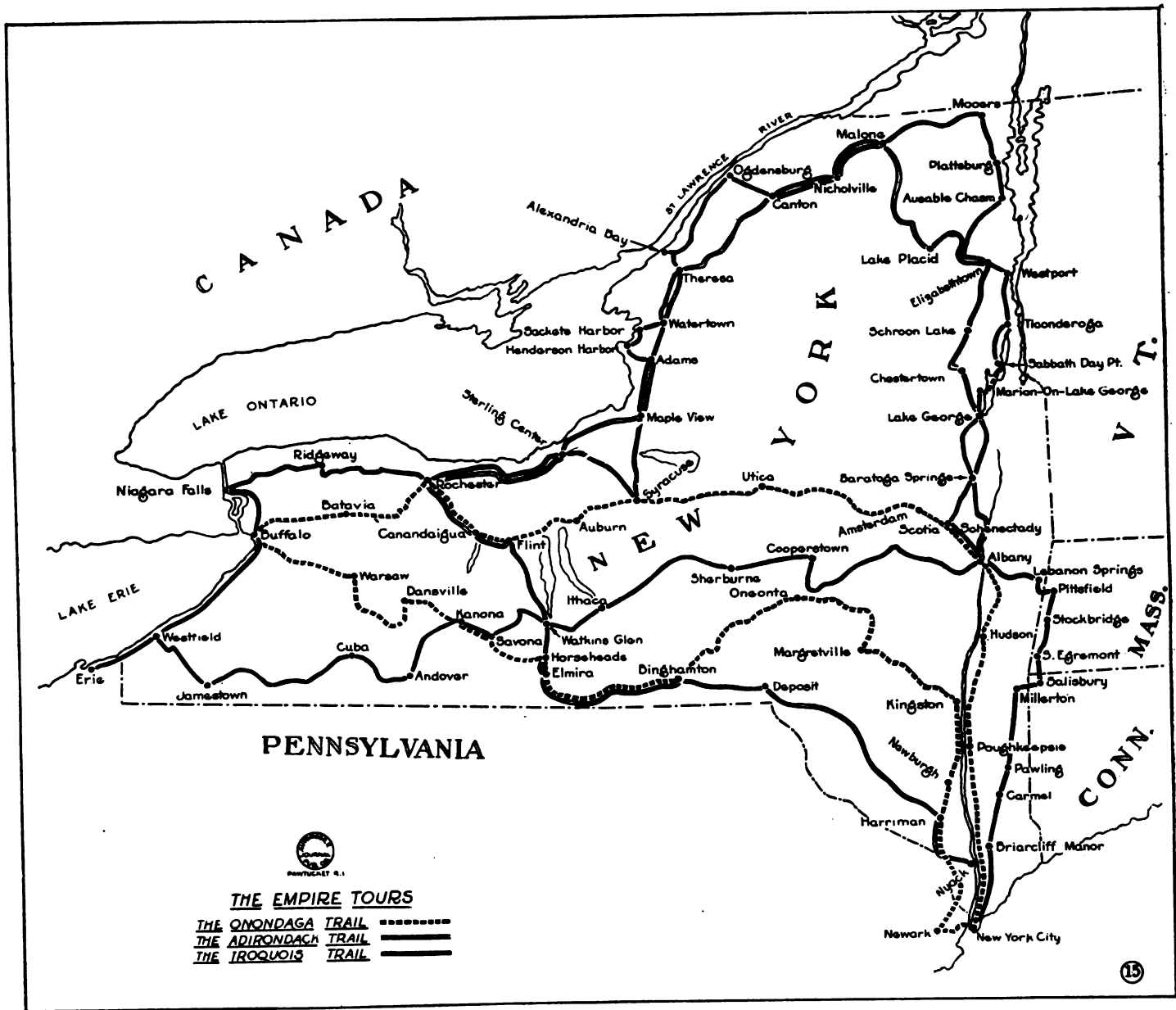
Liberty-Goshen.

Miles	Miles
Liberty 0.0	Bloomington... 28.5
Monticello 12.1	Middletown... 36.7
Wurtsboro 24.1	Goshen 45.1
High View..... 27.3	



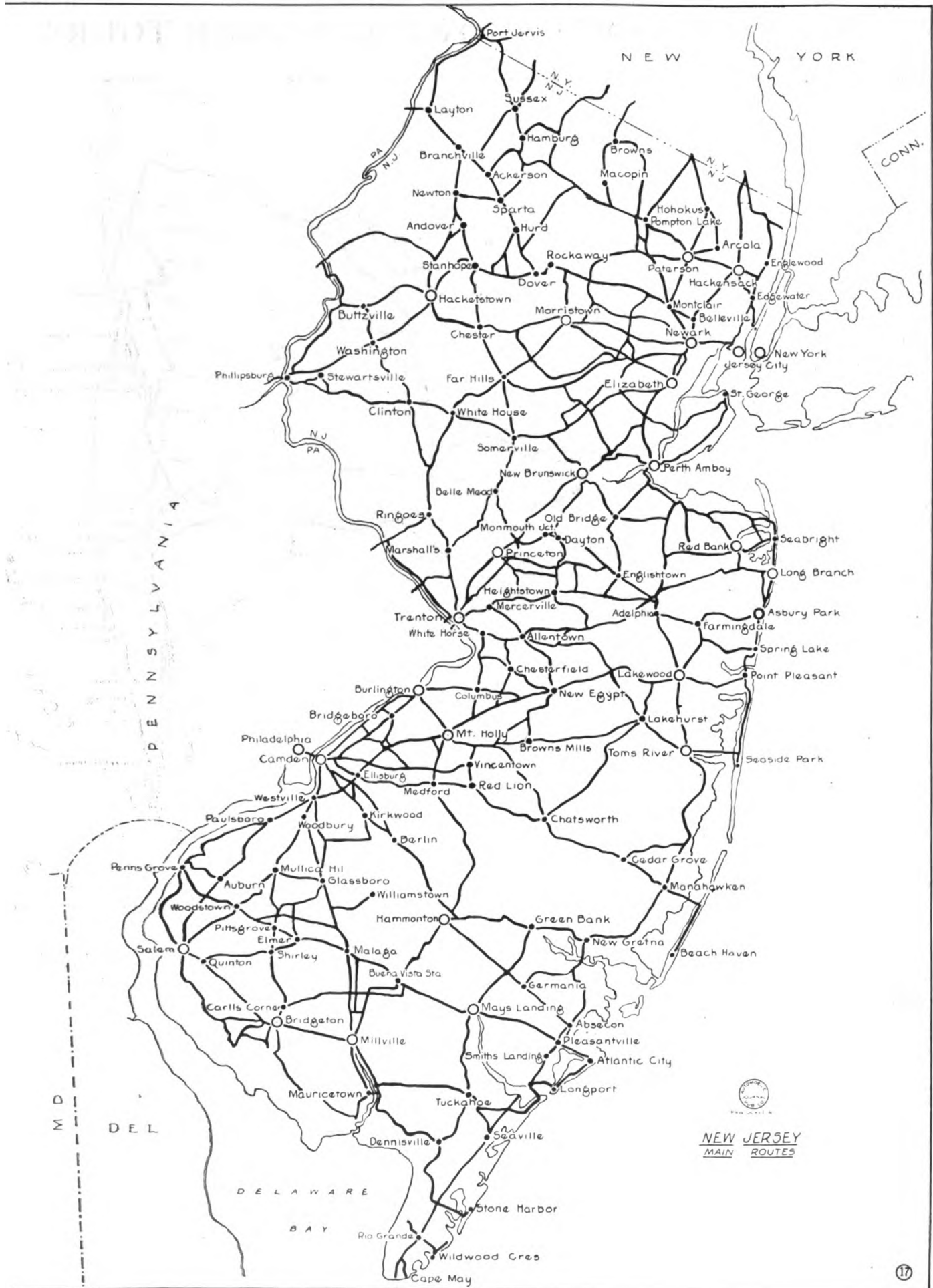
A Road in New York State.

NEW YORK STATE SHOWING EMPIRE TOURS



The Empire Tours Are Crowded with Interest. The Above Map Shows the Onondaga, Adirondack and Iroquois Trails. Good Roads Go to Make Up These Tours, and the Scenery Is Splendid Throughout.

Goshen-New York.			Poughkeepsie-Albany.			Vernon..... 16.5			Manlius Center. 41.3		
Miles		Miles	Miles		Miles	Miles		Miles	Miles		Miles
Goshen..... 0.0	Nanuet..... 35.9		Poughkeepsie.. 0.0	Blue Stores.... 30.8		Oneida Castle.. 21.7	East Syracuse.. 45.1				
Chester..... 4.3	Nyack..... 41.0		Hyde Park..... 6.2	Livingston..... 34.0		Wampsville.... 24.9	Syracuse..... 45.9				
Monroe..... 9.3	Tarrytown..... 41.8		Staatsburg.... 10.2	Hudson..... 42.3		Canastota..... 27.3					
Harriman..... 11.5	Irvington..... 44.5		Rhinebeck..... 16.3	Stockport..... 48.2		Syracuse-Rochester.					
Southfields.. 16.7	Dobbs Ferry... 46.0		Red Hook..... 21.7	Stuyvesant Falls 51.7		Miles					
Tuxedo..... 20.8	Hastings..... 47.8		Up. Red Hook.. 24.4	Kinderhook.... 54.9		Syracuse..... 0.0	Flint..... 57.9				
Sloatsburg... 23.5	Yonkers..... 52.0		Nevis..... 27.0	Valatie..... 56.0		Camillus..... 8.3	Hopewell..... 60.0				
Suffern..... 27.6	43d and Madison		Clermont..... 28.9	E. Greenbush.. 54.9		Elbridge..... 15.3	Canandaigua... 67.4				
Monsey..... 32.2	ave., N. Y. C. 65.6		(Adirondack Trail Starts Here.)			Sennett..... 20.4	Victor..... 77.6				
Spring Valley.. 33.4			Rensselaer.... 74.4	Albany..... 75.3		Auburn..... 25.4	Mendon..... 83.0				
			Albany-Utica.			Seneca Falls... 40.1	Pittsford..... 89.6				
			Miles		Miles	Waterloo..... 43.5	Rochester..... 97.2				
NIAGARA FALLS TOUR.			Albany..... 0.0	Nelliston..... 56.0		Geneva..... 51.0					
			Schenectady... 14.9	St. Johnsville.. 61.9		Rochester-Buffalo.					
New York-Poughkeepsie.			Scotia..... 16.5	Little Falls... 72.2		Miles					
Miles		Miles	Amsterdam... 30.8	Herkimer..... 79.3		Rochester..... 0.0	Patavia..... 37.3				
New York..... 0.0	Harmon..... 32.7		Fort Johnson.. 33.7	Mohawk..... 80.9		Scottsville.... 12.4	East Pembroke 43.4				
Yonkers..... 14.4	Croton..... 33.8		Tribes Hill... 36.1	Ilion..... 82.5		Garbutt..... 14.7	Pembroke..... 50.3				
Hast-on-Hud.. 17.9	Peekskill..... 41.5		Fonda..... 41.5	Frankfort..... 85.0		Mumford..... 18.9	Clarence..... 58.3				
Dobbs Ferry... 18.9	Fishkill Village 60.9		Palatine Bridge 53.1	Utica..... 94.6		Calodonia.... 20.2	Williamsville.. 64.3				
Irvington.... 21.4	Wappingers Falls 66.0		Utica-Syracuse.			LeRoy..... 27.3	Snyder..... 68.2				
Tarrytown.... 24.1	Poughkeepsie... 73.7		Miles		Miles	Stafford..... 31.4	Buffalo..... 75.9				
Ossing..... 30.0			Utica..... 0.0	Chittenango... 34.0		Buffalo-Niagara.					
			New Hartford.. 3.0	Mycenae..... 37.3		Miles					
						Buffalo..... 0.0	St. Johnsburg.. 16.2				
						Niagara Falls.. 26.4					



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Alpine, Nev.	6	Beardstown, Ill.	17	Bridgewater, Pa.	6
Alpine, Utah.	17	Beattie, Mo.	17	Bridgewater, Vt.	28
Alta, Cal.	6	Beaton, Ind.	6	Bridgewater Corners, Vt.	28
Altamont, Cal.	6	Beauce Junction, Can.	35	Bridgton, Me.	31
Altamont, Ill.	21	Beaver, Pa.	6	Brigham City, Utah.	17
Altan, N. Y.	36	Bedford, Ind.	10	Brighton, N. Y.	36
Altoona, Pa.	17	Bedford, N. Y.	27	Brighton, O.	17
Amawalk, N. J.	36	Bedford, Pa.	5	Bristol, R. I.	35
Amboy, Cal.	21	Belair, Pa.	20	Bristol Ferry, R. I.	35
Ambridge, Pa.	6	Belfast, Me.	31	Brockton, Mass.	35
Amenia, N. Y.	36	Belle Grove, Md.	20	Brome, Can.	35
Americus, Ga.	10	Belle Plains, Ia.	6	Brookfield, Mass.	27
Ames, Ia.	6	Belleville, Ind.	20	Brookfield, Mo.	17
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Amsterdam, N. Y.	37	Belleville, Pa.	17	Brownsburg, Ind.	10
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WILL TOUR NORTHWEST WITH TRUCK TRAIN FOR SIXTY DAYS

A practical demonstration that will prove power truck efficiency is the object of the National Motor Truck Development Tour, directed by the National Association of Motor Truck Sales Managers, which will start from Chicago, Aug. 4, and will end at Milwaukee, Wis., Oct. 4.

This tour will be the first of the kind ever organized and it is expected to be the first of a series which will be conducted in different sections of the country.

The plan has at least the merit of originality and the object is to take into each town and city through which the route shall pass an attraction which will be of decided interest to every citizen.

The number of machines that will make up the caravan is not as yet determined, but as many as 25 and possibly more will start. The plan is to have one truck of each make only in line, and the manufacturer can elect any size machine between the load ratings of one and 2½ tons.

All of the trucks will be equipped with pneumatic tires, which will be another novelty. The tour will be the longest drive of the kind ever undertaken and the total distance to be covered between the start and the finish is in road mileage 2778 miles.

Route Itinerary 2778 Miles.

But there is probability that the trucks will be driven considerably more than the distance established in the itinerary,

and probably 3500 miles would be a fair estimate of the total before the trucks return to Chicago, for the finish will be 85 miles from the start. Then there is the distance that must be driven to mobilize the caravan, which will depend largely upon the location of the manufacturer.

The average distance to be driven a day will closely approximate 50 miles. There will be no attempt to make speed because the desire is to demonstrate the uses that may be made of trucks by farmers, and loads will be carried between points that will be determined from time to time and will depend very largely upon the propositions that will be made by the men in charge.

Special Bodies to Be a Feature.

Each manufacturer is expected to have the truck entered equipped with a type of body that will have the greatest utility to the farmer owner, and the sales manager is at liberty to make any choice of body. There is reason to expect that the majority of the bodies will be convertible types that can be adapted for widely varying work, which will be practical in manner of conversion, and be reasonably priced.

The trucks will pick up loads at different points where arrangements have been made for such loading and will transport these to towns along the route. Practically any load will be hauled and the saving of time will be demonstrated and the cost estimated so that the farm-

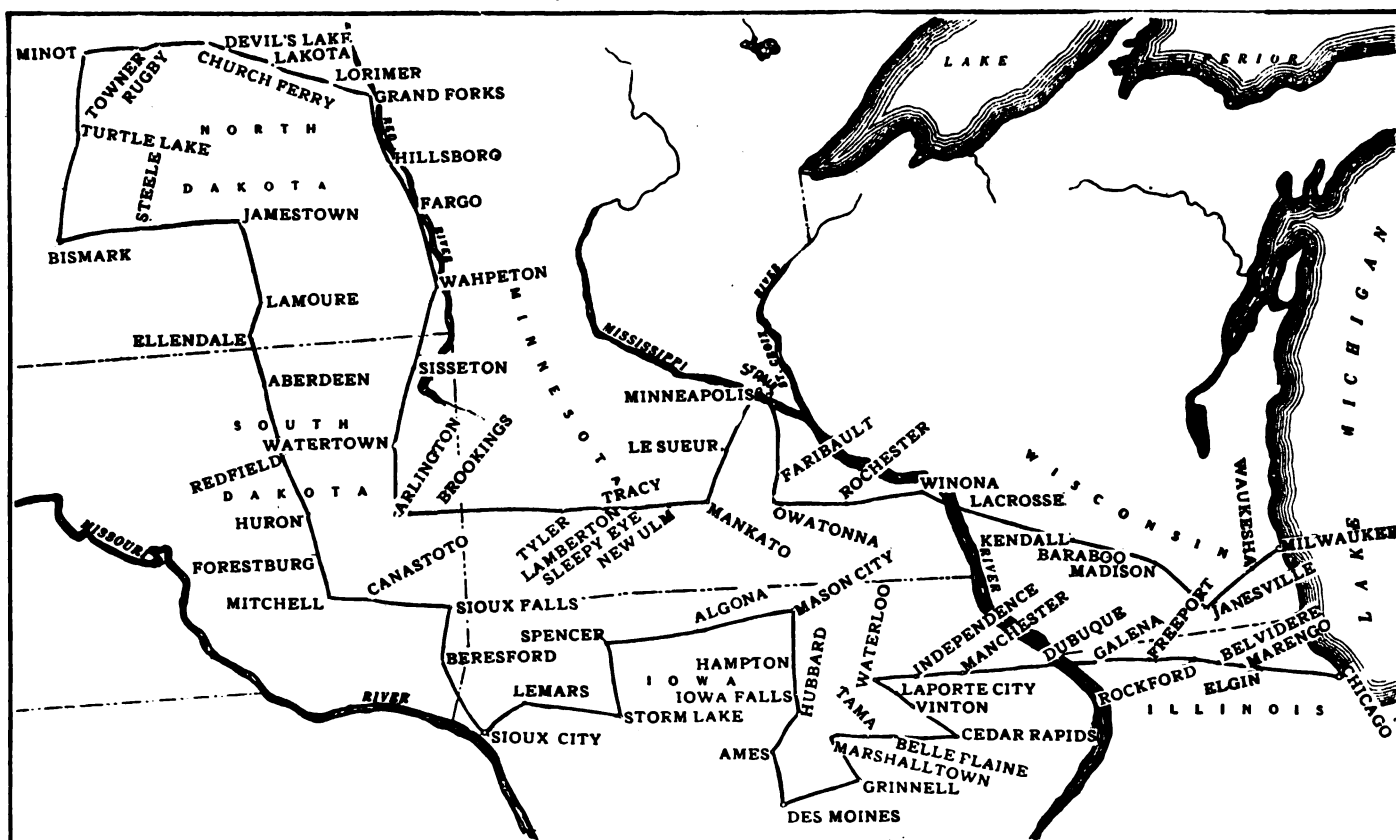
ers will have substantial knowledge with which to make comparisons of the value of trucks as against animal haulage.

Demonstration of Truck Utility.

The utility of the different types of bodies will be explained and these will be either standard or special designs for carrying grain, corn, oats, loose and baled hay, vegetables, fruits, dairy products, eggs, poultry, cattle, for general work, so that their values may be compared with conventional bodies.

The itinerary has been arranged to include six states, Illinois, Iowa, South Dakota, North Dakota, Minnesota and Wisconsin. It will pass through 72 different towns and cities in which there will be shows ranging in length from one hour to two days. The shows will be all in the open, but the lengths will be dependent upon the size of the communities and the time of the day.

For instance, arrival may be made in a town where the caravan will remain during the night. The show may be that evening if early departure is necessary, or it may be the next morning, or both evening or morning. In some instances the show may be begun in the evening and continued through the next day, the departure being the morning of the second day, in one or two an afternoon and evening, and at Devil's Lake, N. D., and Fargo, N. D., the caravan will arrive in the evening, will show the two days following.



The Route of the National Motor Truck Development Tour, Which Will Start from Chicago, Aug. 4, and Cover 2778 Miles in Six Northwestern States in 62 Days, Staging 72 Shows and Making Demonstrations of Work.

ACCESSORIES FOR THE TOURIST

CARRYIT WITHU BOAT.

The "Carryit Withu Boat" is made by the Battle Creek Boat Co., Battle Creek, Mich. It fastens on the side of the automobile. The boat can be assembled in five minutes.

FOLDING GASOLINE COOK STOVE.

The Folding Gasoline Cook Stove, with two burners, closes into the smallest space, yet affords the advantages of a kitchen. It burns ordinary gasoline. There are no loose parts to assemble or become lost. When folded all parts are enclosed easily in the case, which fastens securely. This is a simple and serviceable cooking apparatus for motor tourists. It is sold by the Abercrombie & Fitch Co., Madison avenue and 45th street, New York. Price, \$8.

AFFA FOLDING TABLE.

The Affa Folding Table for campers and tourists is made by the Affa Specialty Co., 34 Southbridge street, Worcester, Mass. It slips under the floor mat of the automobile and is out of the way. It can be assembled in less than two minutes. The table is made entirely of steel, the top galvanized and the frame finished in black enamel, baked on. The maker claims it is the lightest and most compact folding table on the market. Every part snaps into place with the hands, no tools being required. It is large enough for four persons comfortably. It also makes a good card table. The price is \$6 prepaid.

THEROZ BLUE FLAME STOVE.

The Theroz Blue Flame Stove is the culmination of an idea that there was a big field for a device of this kind for motoring and outdoor use, fostered by the success met by the Theroz Field Stove, which was designed and manufactured for the Red Cross for the use of its workers abroad. In order that it would be practical the metal used in its manufacture is a rust proof iron and trimmings are of copper. The stove weighs seven pounds. It is readily portable and it serves as a carry-all for provisions and utensils when not "in action." The stove insures a hot meal wherever and whenever wanted, irrespective of wind or weather. There are

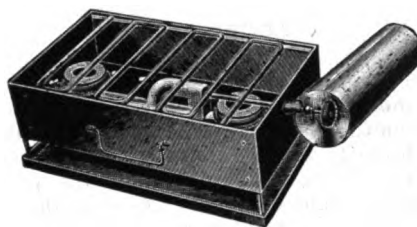


Theroz Blue Flame Stove.

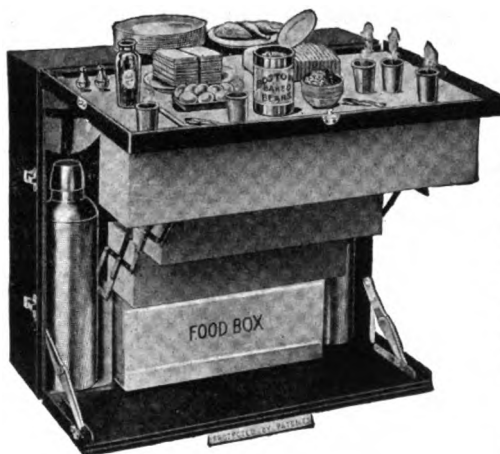
Articles That Come In Handy When Out On the Road



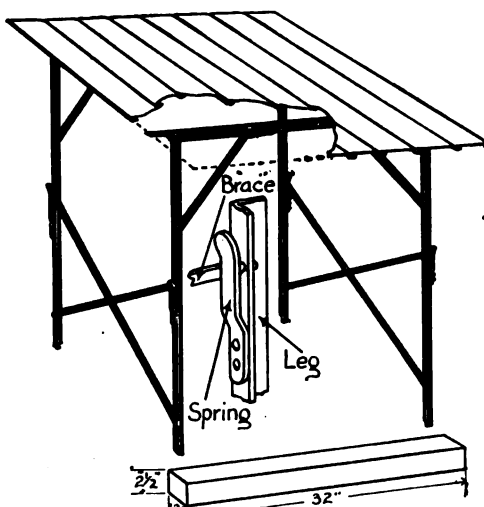
Carryit Withu Boat.



Folding Gasoline Cook Stove.



Motor Luncheon Cases.



Affa Folding Table.

two burners, with a cooking surface area of eight by 16 inches. The stove is sold by the Theroz Co., Woolworth Building, New York.

MOTOR LUNCHEON CASES.

The Knickerbocker Case Co., Knickerbocker Building, Chicago, offers a variety of motor luncheon cases. No. 4 case (illustrated) is portable and stands alone anywhere. There are three hinged trays and a bottom compartment for one-quart vacuum bottles or jars. The cover serves as a table. The case is made of artificial leather covered and lined and sells for \$5.

HAWKEYE PICNIC REFRIGERATOR.

The Hawkeye Picnic Refrigerator enables one to enjoy a cool, refreshing lunch. With it one can have ice cold drinks, cool, fresh butter that doesn't melt, sandwiches and salads that are fresh and appetizing. It keeps the food just as clean and sanitary as does the ice box at home. This device is made by the Burlington Basket Co., Burlington, Ia.

COMBINATION AUTO TENT AND COVER.

The Combination Auto Tent and Cover is designed to enclose the body of the car and provide room for the occupants under one roof. This allows the use of the car as sleeping quarters for children without separating them from the other members of the party. Protection is given to articles stored in the tonneau. The front of the tent is cut to conform to the shape of the dash and the running board, but, if desired, could be made to cover the hood as well, with 20 per cent. additional charge.

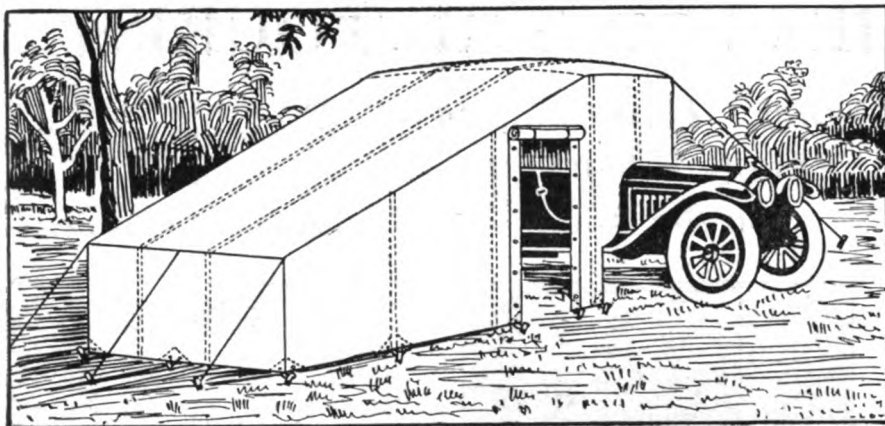
The tent is erected by simply throwing one end over the top of the car and stretching the tent out to the side. Of course there are no poles necessary.

The tent wall is two feet six inches high and seven feet from the car, with the front space of the tent seven feet by the length of the pole. Each tent is shipped complete in a waterproof duffer bag.

The manufacturer is the Baker & Lockwood Manufacturing Co., Seventh and Wyandotte streets, Kansas City, Mo.



Hawkeye Picnic Refrigerator.



Combination Auto Tent and Cover.

The prices are from \$65.80 to \$99.35, depending on the material. The floor, made of 10-ounce white duck, will be

sewed into any of the tents for \$11 extra. In ordering, specify name and model of car.

ACORN UNI-LITE.

The Acorn Uni-Lite is for use both indoors and outdoors as a lantern or a lamp. The maker claims that it can be burned in any position and can be knocked over or rolled on the ground while lighted without affecting the light and without danger of damaging the lamp. It is made by the Acorn Brass Manufacturing Co., 426 South Clinton street, Chicago, and retails for \$9. It is sent on 15 days trial.

THERMOS BOTTLE CASES.

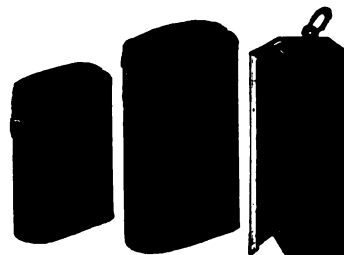
The Thermos Bottle Case with lunch box is sure to come in handy. The case is made of strong frame covered with black grained enameled duck. The food box is made of fine quality metal highly polished. If desired an extra bottle may be used instead of the food box. This is sold by the Abercrombie & Fitch Co. Prices range from \$4.75 for the pint case with lunch box to \$8 for the two-quart case with lunch box. The thermos bottle, pint size, sells for \$3.50 and quart size for \$5.25.

DUST-TITE DUFFLE BAGS.

The Dust-Tite Duffle Bags, made by the Baker & Lockwood Manufacturing Co., Kansas City, Mo., carries articles most compactly and conveniently. It is made of khaki colored cloth that will not show soil, and is strongly reinforced and well sewed. Each bag has an extra flap inside the mouth to protect the contents from dust sifting into the open end. There are two strong handles on each bag for carrying and tying on to the car. The tonneau size bag, 12 inches in diameter by 27 inches long, sells for \$3.50, and the running board size, 16 inches in diameter by 36 inches long, for \$6.25.

UMBRELLA CAMP STOVE.

The Umbrella Camp Stove is said to be the only camp stove with a revolving grate. The long and adjustable legs of the stove, forming a tripod, make it just



Thermos Bottle Cases.

as practicable to use upon the hillside as upon the level, and the revolving grate is just as easy to revolve and is always level. The stove was especially designed to cook over or by any sized camp fire. It is manufactured by the



Umbrella Camp Stove Co., Mt. Vernon, Wash., and sells for \$7.50, including a canvas case.

FOLDING CAMP STOVE.

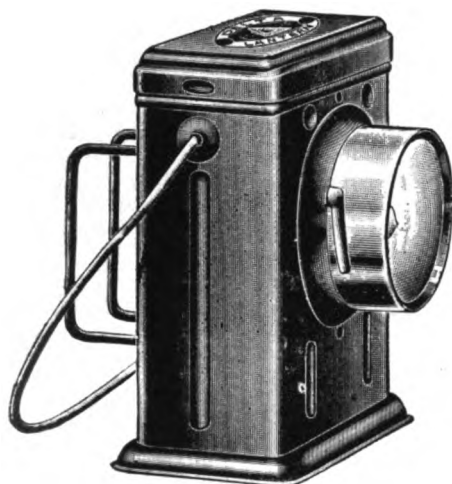
The American Folding Camp Stove, made by the Baker & Lockwood Manu-



facturing Co., Kansas City, Mo., sells for \$10.84. It meets the requirements for a dependable, compact camp stove. It is convenient and easy to operate and is ready for business in a jiffy. Simply remove the cover, place the tank in position and the stove is ready to light. There are no loose parts to become lost, nothing to screw together or assemble, no alcohol or torch required to light it.



Dust-Tite Duffle Bag.



Delta Electric Lantern.

DELTA ELECTRIC LANTERN.

The Delta Electric Lantern would be especially handy for tourists who desire to camp out at night. Its extra powerful silver plated reflector throws a strong and intense white light scores of feet all around. It uses two ordinary No. 6 dry batteries. It is made by the Delta Electric Co., Marion, Ind., and sells for \$3.50 postpaid, fully equipped with batteries and ready for use.



Acorn Uni-Lite.



Vacuum Bottle Cases.

VACUUM BOTTLE CASES.

The Warren Vacuum Bottle Cases, manufactured by the Warren Leather Goods Co., Worcester, Mass., are nicely made and lined and are intended to give the best possible protection to the bottles. Experience has proved that they are well worth their cost, not only for protection, but for ease and comfort in handling and carrying the bottles. The strap over the top forms an excellent handle. The company does not furnish bottles. Prices for the cases range from \$4 to \$10 for those made of brown smooth cowhide and black long grain cowhide leather, and from \$1.75 to \$5 for artificial leather cases.

TYCOS WEATHER BAROMETER.

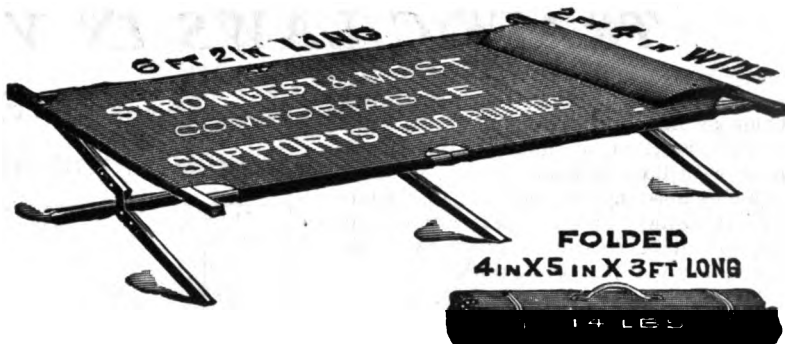
With the Tycos Weather Barometer it is claimed the tourist can tell the weather 24 hours ahead. It is an aneroid barometer adjustable for the altitude of any locality below 3500 feet, and responds at once to the slightest changes. It is made by the Taylor Instrument Companies, Rochester, N. Y., and sells for \$12.

SPECIAL AUTO COT.

The Special Auto Cot or Bed is made by the Baker & Lockwood Manufacturing Co., Kansas City, Mo. It folds into a neat package five by six inches by three



Weather Barometer.



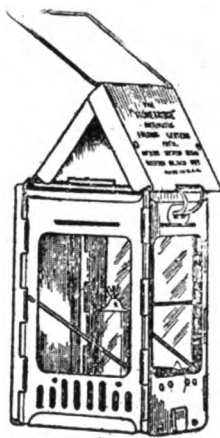
Special Auto Cot.

GLOWNITE UTILITY WATCH.

The Glownite Utility Watch will come in handy for motorists who camp out. It is sold by J. F. Mansfield, wholesale distributor, 9 Maiden lane, New York.

**FOLDING LANTERN.**

A folding lantern is well worth taking along on a tour. The one illustrated is

**PATENTED**

made by the C. H. Stonebridge Manufacturing Co., 21 Warren St., New York.

MOTOR LUNCH KITS.

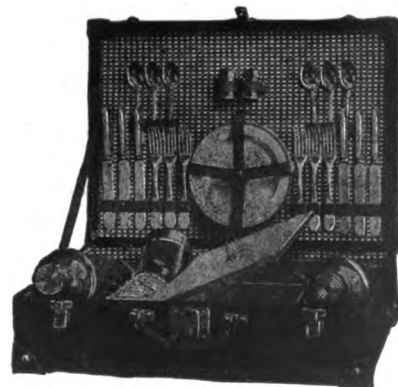
Motor Lunch Kits, made by the Warren Leather Goods Co., are splendid for tourists. No. 1723 is fitted for four persons. It has a black enamel covering with a washable and waterproof lining in cover. Four knives, four each of forks, teaspoons and enamel plates and cups, a salt and pepper box and one large size metal food box are furnished. There is provided a space for holding a quart vacuum bottle, but the company does not furnish the bottles. The size of the kit is 15½ by 5½ outside measure, and the list price is \$15. No. 1725 is fitted for six persons, the price being \$20.

MAKETLA BLANKETS.

Blankets made of the same material that went into blankets for the soldiers during the war are offered to the motorist by the Maketla Co, 611 Drexel Building, Philadelphia. Style A blanket makes a good auto robe. It comes olive drab or oxford gray, 42 by 66 inches, weighing three pounds, and sells for \$7 each, or three blankets for \$19.50.



Maketla Blankets.



Motor Lunch Kit.

TRAFFIC LAWS IN VARIOUS STATES

Alabama—Exemption from registration same as in motorist's home state; must display registration numbers in accordance with laws of home state; exempted vehicles must not be used for hire while in Alabama; speed, "reasonable and proper" with maximum of 30 miles an hour; local ordinances prohibited.

Arizona—Exemption from registration for six months.

Arkansas—Exemption from registration same as in motorist's home state.

California—Non-residents exempt from license for three months, but must register with highway vehicle department within 24 hours of arrival in state; no charge for such registration; speed, "reasonable and proper" with maximum of 30 miles an hour; local ordinances prohibited.

Colorado—Non-residents exempt for three months, but must procure free registration tag from the secretary of state; exemption does not apply to trucks and trailers.

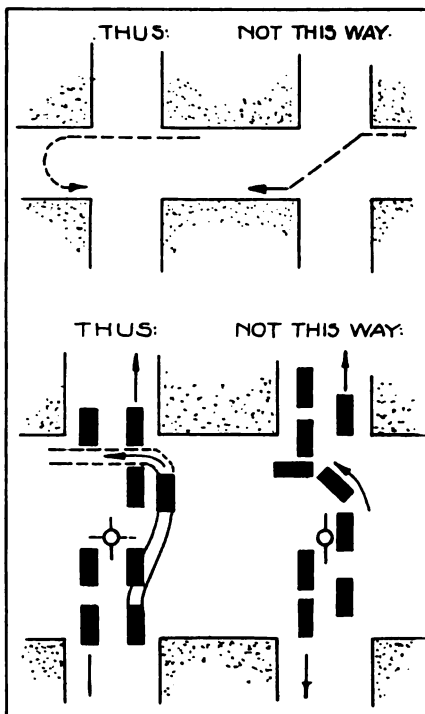
Connecticut—Exemption for 30 days; home state license tags front and rear; speed, "reasonable and proper" with no maximum limits fixed by the new state law effective this year; full stop 10 feet in rear of standing street car.

Delaware—Same exemption as in motorist's home state; speed on streets where buildings are less than an average distance apart of 100 feet, one mile in four minutes; at curves and intersections, one mile in eight minutes; where buildings are more than 100 feet apart, one mile in two minutes, 24 seconds; descending steep hills and passing other vehicles, one mile in five minutes; elsewhere, "reasonable."

District of Columbia—Same exemption as granted in motorist's own state; motorist "shall proceed with great caution, especially on narrow streets, in making turns, in crossing other streets and in passing other vehicles or street cars;" dazzling lights prohibited; no unnecessary sounding of warning signals.

Florida—Same exemption as in motorist's home state; speed, "reasonable and proper," with maximum of 25 miles an hour; three miles an hour maximum when approaching street car that has

Regulations In Effect for Non-Resident Motorists



Changing Direction to the Left at a Street Intersection.

stopped or is about to stop; 10 miles an hour when operator's view of road and traffic is obstructed; dimmers necessary.

Georgia—Exemption for 30 days; speed, "reasonable and safe" with maximum of 30 miles an hour; dimmers necessary.

Idaho—Same exemption as in motorist's home state; speed, "careful and prudent," with maximum 30 miles an hour.

Illinois—Exemption for 60 days if home state grants same privilege; speed, "reasonable and proper" with maximum of 25 miles an hour; license tags front and rear; lights must be dimmed when within 250 feet of approaching vehicle.

Indiana—Exemption for 60 days if motorist's home state grants same privilege; speed, "reasonable and prudent;" in built-up sections, 10 miles an hour; towns and villages, residential sections, 15 miles; where view is obstructed, six miles; elsewhere, 25 miles; must not throw spot lights when passing vehicles.

Iowa—Exemption same as in motorist's home state; speed, "careful and prudent," with maximum of 25 miles an hour; must not throw spot lights when approaching vehicle.

Kansas—Exemption for 60 days; speed, "reasonable and proper," with maximum of 40 miles an hour; unlawful to turn spot light on approaching vehicle; dimmers necessary.

Kentucky—Exemption same as in motorist's home state; speed, "reasonable and proper;" closely built-up business sections, 10 miles; residential sections,

15 miles; elsewhere, 20 miles; spot lights prohibited except in emergency.

Louisiana—Same exemption as in motorist's home state.

Maine—Exemption for 30 days; speed, "reasonable and proper;" five miles an hour when passing places designated with official signs, "Automobiles Go Slow;" eight miles an hour when view of road or traffic is obstructed; 25 miles an hour in open country; in compact sections, 15 miles an hour provided signs, "Speed Limit, Fifteen Miles," are posted.

Maryland—Exemption for two periods of eight consecutive days.

Massachusetts—Exemption same as in motorist's home state; number plates front and rear; speed, "reasonable and proper;" in thickly settled districts, 15 miles; elsewhere, 20 miles; where view is obstructed, eight miles; cities and towns have special regulations as to speed; "in approaching or passing a car of a street railway which has been stopped to allow passengers to alight from or board the same, the operator of every motor vehicle shall not drive such vehicle within eight feet of the running board or lowest step of the car then in use by passengers for the purpose of alighting or boarding, except by the express direction of a traffic officer, or except at points where passengers are protected by safety zones."

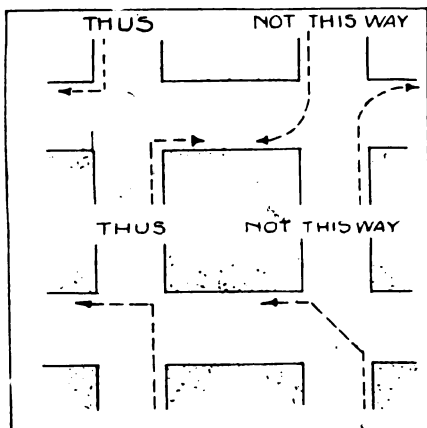
Michigan—Exemption for 90 days if motorist's home state grants similar exemption; speed, "reasonable and proper;" maximum, 25 miles on highways; in built up portions of cities and villages, 10 miles; in other portions of cities and villages, 15 miles; signs of local authorities relative to speed in parks must be obeyed; dimmers required.

Minnesota—Exemption for 60 days.

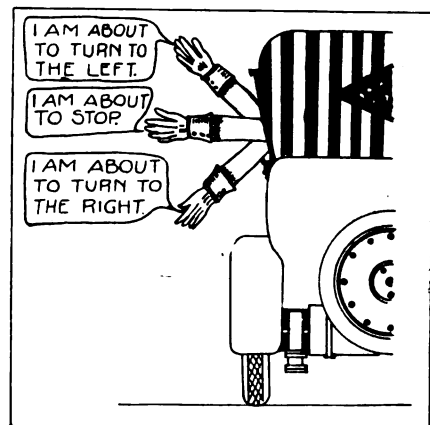
Mississippi—Exemption for 60 days; speed, "reasonable and proper;" maximum, 15 miles in incorporated cities, towns and villages; elsewhere, 30 miles.

Missouri—Exemption for 20 days.

Montana—Registration not required for non-residents temporarily sojourning in the state; speed, "careful and prudent;" cities and towns have local speed ordinances.



Turning Into Another Street.



Code of Signals.

Nebraska—Exemption for 30 days; speed, "reasonable and proper;" maximum, 35 miles an hour.

Nevada—Exemption for 30 days; cities and towns may pass speed ordinances, but must not set minimum less than 12 miles an hour.

New Hampshire—Exemption for 10 days; non-residents may register for July, August and September at half annual fees; speed, "reasonable and proper;" thickly settled districts, 15 miles; where view is obstructed, 10 miles; elsewhere, 25 miles.

New Jersey—Exemption for not more than 15 days, if home state grants similar exemption; exemption also applies to tourists from Canada; speed, one mile in seven minutes upon sharp curves or when turning corners; one mile in four minutes at junction of intersection of prominent cross road in open country; one mile in five minutes in built up sections; one mile in four minutes within 200 feet of a horse; open country, 30 miles.

New Mexico—Exemption for 60 days.

New York—Same exemption as granted in motorist's home state; speed, "careful and prudent;" maximum, 30 miles an hour; New York City has its own speed laws and regulations; headlights and auxiliary lights must not rise above 42 inches from ground and 75 feet in front of lamps.

North Carolina—Exemption for same period as in motorist's own state, not exceeding 60 days; speed, "reasonable and proper."

North Dakota—Exemption same as in motorist's home state.

Ohio—Same exemption as in motorist's home state; speed, eight miles an hour in municipality; 15 miles in other sections of municipality; 25 miles outside of a business and closely built up sections in a municipality.

Oklahoma—Same exemption as in motorist's own state.

Oregon—Exemption for 30 days; speed, "careful and prudent;" maximum, 30 miles an hour.

Pennsylvania—Same exemption as in motorist's own state; speed to be reasonable, with maximum of 25 miles an hour; dimmers compulsory.

Rhode Island—Exemption for 10 days in the calendar year; speed, "reasonable and proper;" in built-up sections, 15 miles an hour; elsewhere, 25 miles; "no person shall allow any motor vehicle operated by him to stand unattended on any public highway without first locking or making fast such motor vehicle in such manner as to prevent such vehicle from being set in motion contrary to the will of the owner or the person in charge thereof."

South Carolina—Same exemption as in motorist's home state.

South Dakota—Same exemption as in motorist's home state; speed, "careful and prudent;" maximum, 25 miles an hour.

Tennessee—Exemption for 30 days.

Texas—Same exemption as in motor-

ist's home state; speed, "careful and prudent;" 10 miles an hour in business districts in cities of more than 40,000 population; 15 miles in smaller cities; elsewhere, 25 miles; glaring lights prohibited.

Utah—Exemption for 30 days; speed, "reasonable and safe."

Vermont—Exemption same as in motorist's home state; speed must not be "careless or negligent;" in thickly settled districts, 10 miles; elsewhere, 25 miles; special regulations posted on dangerous roads; "when vehicles are approaching each other from opposite directions spot lights shall not be used except when projecting their rays directly on the ground and at a distance not exceeding 30 feet in front of the vehicle."



Scene in Sequoia National Park.

Virginia—Exemption same as in motorist's home state; speed, not greater than 15 miles an hour; cities and towns have own ordinances.

Washington—Exemption for 90 days.

West Virginia—Same exemption as in motorist's home state; speed, consistent with safety; maximum, 35 miles an hour.

Wisconsin—Exemption for non-residents; speed, "reasonable and proper;" 15 miles an hour in corporate cities and villages; elsewhere, 25 miles.

Wyoming—Exemption for 90 days; speed, "reasonable and proper;" maximum, 25 miles an hour.

GENERAL TRAFFIC RULES.

The following rules and regulations for traffic are in effect in a number of states and the larger cities.

1. All vehicles will keep to the right.

2. Vehicles meeting will pass on the right.

3. Vehicles moving slowly must keep near the right curb, allowing those of increased speed to occupy the center of the street.

4. Vehicles turning into another street to the right will keep to the right. When to the left continue to the opposite side of the lateral street before changing direction to the left.

5. Vehicles will not be allowed to stop with the left side to the curb, nor on any street crossing. When desiring to stop on the left side of the street make a complete circle, bringing the right side of the vehicle to the curb.

6. If it is desired to change direction to the left at a street intersection where a patrolman is on duty to regulate traffic:

Enter the street you wish to turn into on signal from officer.

Keep to the right so as to allow those following you to pass on your left and proceed.

Watch and listen for signal from officer for traffic to move in the direction you wish to go.

Turn to the left and move forward.

7. In turning out, stopping or backing up, the following code of signals shall be used:

(a) Hand extended up at an angle of 45 degrees means turning out to the left.

(b) Hand extended horizontally means going to stop.

(c) Hand extended down at an angle of 45 degrees means turning out to the right.

(d) Ample warning shall be given before backing up, either visible or audible, so as to avoid injury to other vehicles and pedestrians.

CANADIAN TOURING.

American tourists do not require passports. If the automobile is to remain in Canada less than 30 days a touring permit may be obtained from the Canadian customs officers at the port of entry. This permit will allow the car to be operated in the Dominion for one month without securing a customs bond or depositing duty.

American licenses and car registrations are reciprocally recognized in the Province of Quebec, and in other provinces they are valid for from three weeks to three months.

If the tourist is to spend more than 30 days in Canada, a customs bond valid for six months must be obtained, guaranteeing re-exportation of the car within that period, and Canadian registration must be effected and licenses obtained.

In order to bring the car back into the United States, duty free, on the return journey, it must be registered with the American customs office at the international border when leaving the United States, and a certificate of export obtained.

PROJECTED NATIONAL HIGHWAYS

Following is a list of projected national highways:

Routes Coursing East and West.

1. **Lincoln Highway:** New York City to San Francisco via Philadelphia (with feeder into Washington, D. C.), Pittsburgh, Lima, Joliet, Omaha, Cheyenne, Salt Lake City, Ely, Reno.

2. **National Old Trails Road:** Washington to Los Angeles via Cumberland, Wheeling, Columbus, Indianapolis, St. Louis, Kansas City, Dodge City, Trinidad, Albuquerque, Holbrook, Flagstaff, Needles and Barstow.

3. **Pikes Peak Ocean-to-Ocean Highway:** New York or Philadelphia (with Boston and Washington extensions), Harrisburg, Pittsburgh, Columbus, Springfield, St. Joseph, Belleville, Colorado Springs, Rifle, Salt Lake City (with undetermined routes via Ogden, Winnemucca and Sacramento to San Francisco, also via St. George, Las Vegas and Red-

Trail for most part. The Midland Trail starts from Washington and runs through Virginia and West Virginia connecting with the Roosevelt National Highway at Lexington, Ky.)

6. **Southern National Highway:** Washington to San Diego via Richmond, Clarksville, Greensboro, Salisbury, Asheville, Knoxville, Nashville, Memphis, Little Rock, Dallas, Roscoe, Roswell, El Paso, Tucson, Phoenix and Yuma.

7. **Old Spanish Trail:** Miami or Ft. Myers, Lake City via Jacksonville or Tampa, Tallahassee, Mobile, New Orleans via Shreveport or Galveston to Dallas, Midland, El Paso, Douglas, Tucson, Phoenix, San Diego to Los Angeles.

8. **Bankhead Highway:** Washington to Los Angeles via Richmond, Clarksville, Durham, Greensboro, Salisbury, Charlotte, Spartanburg, Greenville, Athens, Atlanta, Birmingham, Jasper, Tupeio, Memphis, Little Rock, Dallas, Ft.

12. **Pacific Highway:** Vancouver to San Diego via Seattle, Olympia, Portland, Eugene, Redding, San Francisco, Santa Barbara and Los Angeles.

13. **Dixie Highway:** Chicago and Mackinaw City to Miami and Marco, Chicago to Indianapolis via Danville; Mackinaw to Indianapolis via Grand Rapids or to Chattanooga via Saginaw, Detroit, Dayton, Knoxville; Indianapolis to Chattanooga via Louisville and Nashville; Chattanooga to Marco, Fla., via Atlanta, Tallahassee, Gainesville and Bartow; Chattanooga to Miami via Madison, Waynesboro, Jacksonville and Titusville with connections between Macon and Jacksonville, Lake City and Jacksonville, Arcadia and Palm Beach and Marco and Miami.

14. **Jefferson Highway:** New Orleans to Winnipeg via Shreveport, Denison, Muskogee, Joplin, Ft. Scott, Kansas City, St. Joseph, Des Moines, Mason City, St. Paul, Minneapolis, Wadena to Winnipeg.

15. **Jackson Highway:** Chicago or Niagara Falls to New Orleans or Selma; Chicago to Louisville via Lafayette, Indianapolis and Brownstown; Niagara Falls to Louisville via Cleveland, Columbus and Lexington; Louisville to Nashville via Hodgenville and Scottsville; Nashville to Selma via Fayetteville, Gadsden, Birmingham and Montgomery, Nashville to New Orleans via Tusculumbia, Brookville, Meridian and Logtown.

16. **Meridian Road:** Winnipeg to Galveston or Laredo via Fargo, Watertown, Columbus, Wichita, Lawton, Ft. Worth, Waco to Galveston via Houston or to Laredo via Austin and San Antonio.

17. **King of Trails Highway:** Winnipeg to Galveston or San Antonio via Fargo, Sioux Falls, Omaha, Kansas City, Muskogee, Dallas and Waco.

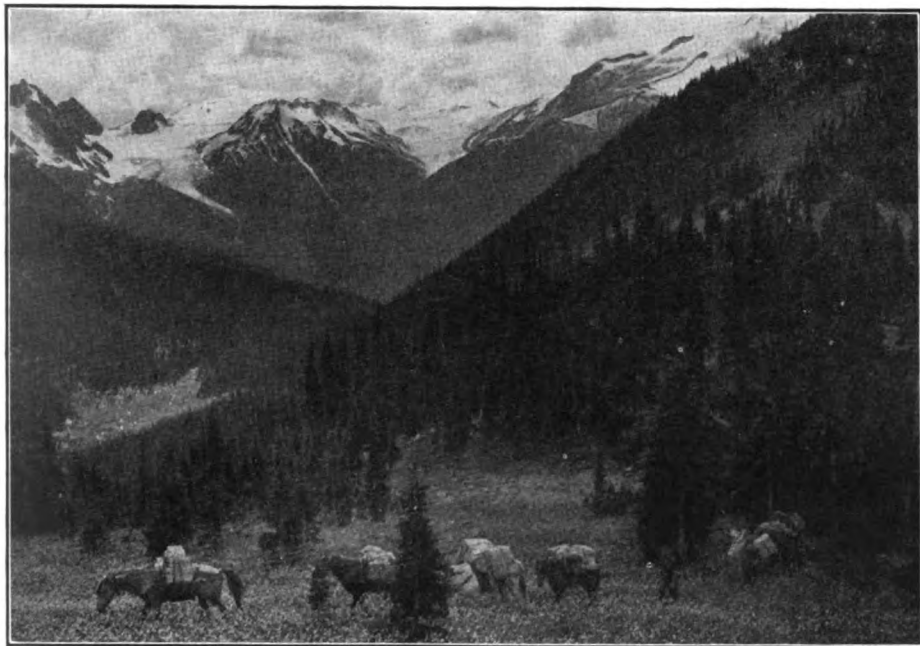
18. **Lakes to Gulf Highway:** Detroit, Ft. Wayne, Indianapolis, Louisville, Nashville, Tusculumbia, Memphis, Jackson to New Orleans.

19. **National Park-to-Park Highway:** Connecting up the National Parks of the Rocky Mountains and Pacific Slope beginning and ending at Denver. Route via Cheyenne, Lost Cabin, Yellowstone Park, Butte, Kalispell, Spokane, Seattle, Portland, Medford, San Francisco, Yosemite, Mohave, Los Angeles, Needles, Grand Canyon, Mesa Verde and Colorado Springs.

FOUR-FOLD HIGHWAY SYSTEM.

The National Highways Association states:

"All attempts to develop roads by first building local roads have failed. Not until trunk lines were built was there any material advance in road building. These trunk lines brought about the desire for and building of the local feeder lines. Otherwise there was no desire or reason for the existence of such local feeders. Branch railroad lines existed after the trunk lines were established—otherwise they could not have existed. It must be the same with roads."



(Copyright by Kisser Photo Co. for Great Northern Railway.)

Pack Train on Buck Creek Pass, Near Glacier Peak, Cascade Mountains.

lands to Los Angeles, following the Arrowhead Trail).

4. **Yellowstone Trail:** Plymouth Rock to Puget Sound via Hartford, Kingston, Elmira, Akron, Fremont, Ft. Wayne, Chicago, Oshkosh, Abbottsford, Twin Cities, Ortonville, Mobridge, Fallon, Livingston (with side route to Yellowstone National Park), Missoula (with side route to Glacier National Park), Spokane, Walla Walla, Seattle and Tacoma.

5. **Roosevelt National Highway:** Montauk Point, L. I., to San Francisco via Oyster Bay, New York City, Albany, Syracuse, Buffalo, Cleveland, Mansfield, Columbus, Cincinnati, Lexington, Louisville, St. Louis, Kansas City, Limon via Denver or Colorado Springs, Grand Junction, Salt Lake City, Ely, Goldfield, Lone Pine through Roosevelt National Park to San Francisco or Los Angeles. (This route coincides with the Midland

Worth, El Paso, thence to coast over route not yet determined upon.

9. **National Parks Highway:** New York to Seattle via Albany, Buffalo, Cleveland, Chicago, Milwaukee, La Crosse, Twin Cities, Fargo, Bismarck, Glendive, Livingston (side trip to Yellowstone National Park), Butte, Missoula (side trip to Kalispell and Glacier National Park), Wallace, Spokane, Vantage Ferry and Snoqualmie Pass.

10. **Dixie Overland:** Savannah to Los Angeles via Oglethorpe, Montgomery, Vicksburg, Shreveport, Dallas, Roscoe, Roswell, El Paso, Douglas, Tucson, Phoenix, Yuma, San Diego.

Routes Coursing North and South.

11. **Atlantic Highway:** Quebec or Calais to Miami via New York City, Philadelphia, Washington, Richmond, Raleigh, Columbia, Augusta, Savannah and Jacksonville.

LATEST MODES FOR THE WOMAN MOTORIST

Up-to-the Minute Hints on What to Wear When Motoring.

By Mrs. A. Sherman Hitchcock.

SUMMER'S hot waves are forcible reminders of green fields, mountain breezes and the cool breath from lake and ocean, and the woman who can enjoy motoring, finds this form of pleasure extremely welcome at this season of the year. Whether it is a long tour, a week-end visit, a day's trip or merely a little spin at night to cool off before going to slumber, it is the ideal recreation for out-of-doors.

For the motor woman to be well equipped for the various kinds of motoring means something more than a coat and a hat. It means rather, coats and hats, dresses and accessories. Of course, everything depends upon one's plans for the touring season and due consideration must be given to where she is going to wear her clothes. If the motor trip is to be an outing in the country, a good loose wool cover-all coat, wool sweater, tweed or mohair skirt and two or three simple blouses may be taken along, and adding a jar of sunburn



Photo by Joel Feder.

A Very Smart and New Motor Coat with All Sorts of Comfortable Ways in Which to Guard Against Wind and Weather Is Made of This Wonderfully Soft Tan Leather.



The Auto Soire Cape Coat Is the Very Thinnest and Lightest Weight Rain and Dust Resisting Garment Ever Made for the Motorist. It Is Lovely in Appearance, Resembling the Garment of Silk, and Has Absolutely No Weight.

cream and the toilet articles and night clothes the outfit will be quite sufficient for all needs.

On the other hand, if the party is preparing for an over-Sunday stay at a smart country house, where at least two dinner frocks and a dancing frock will be needed, beside a dainty morning frock, and tennis or golf garb, a motor trunk with plenty of trays will be none too commodious to carry the requisite paraphernalia.

Clothing Must Be Correct.

The average over-Sunday motorist, however, avoids the more extensive wardrobe and carries her belongings in the conventional suit case, whose capacity is almost unlimited. Nearly every woman can pack more into a suit case than she wants to carry.

The choice of motor equipment is a most important question and every woman will agree with me that in order to thoroughly enjoy a motor trip the clothing must be of the correct kind and well chosen. If a woman is doing her own driving on a tour—and it is one of the commonest sights in the world to see her doing it, it is not necessary to be disguised as a chauffeur, and yet touring in a street dress is equally absurd. Motor

raiment for touring should be sensibly practical, but not necessarily exaggeratedly so. It should be individual and distinctive and always remain within the limits imposed upon it by your own comfort. It must be admitted that in selecting and wearing motor clothes, men excel women. This is without doubt because a man usually insists upon the durability of fabric and color and the elimination of all unnecessary frills. The woman who aims at these same things is sure to achieve an unmistakable smartness, and when she goes away on a week-end visit a most practical and severe top coat may cover the most feminine of silk frocks, but there will be nothing to flutter and spoil her mannish simplicity of line.

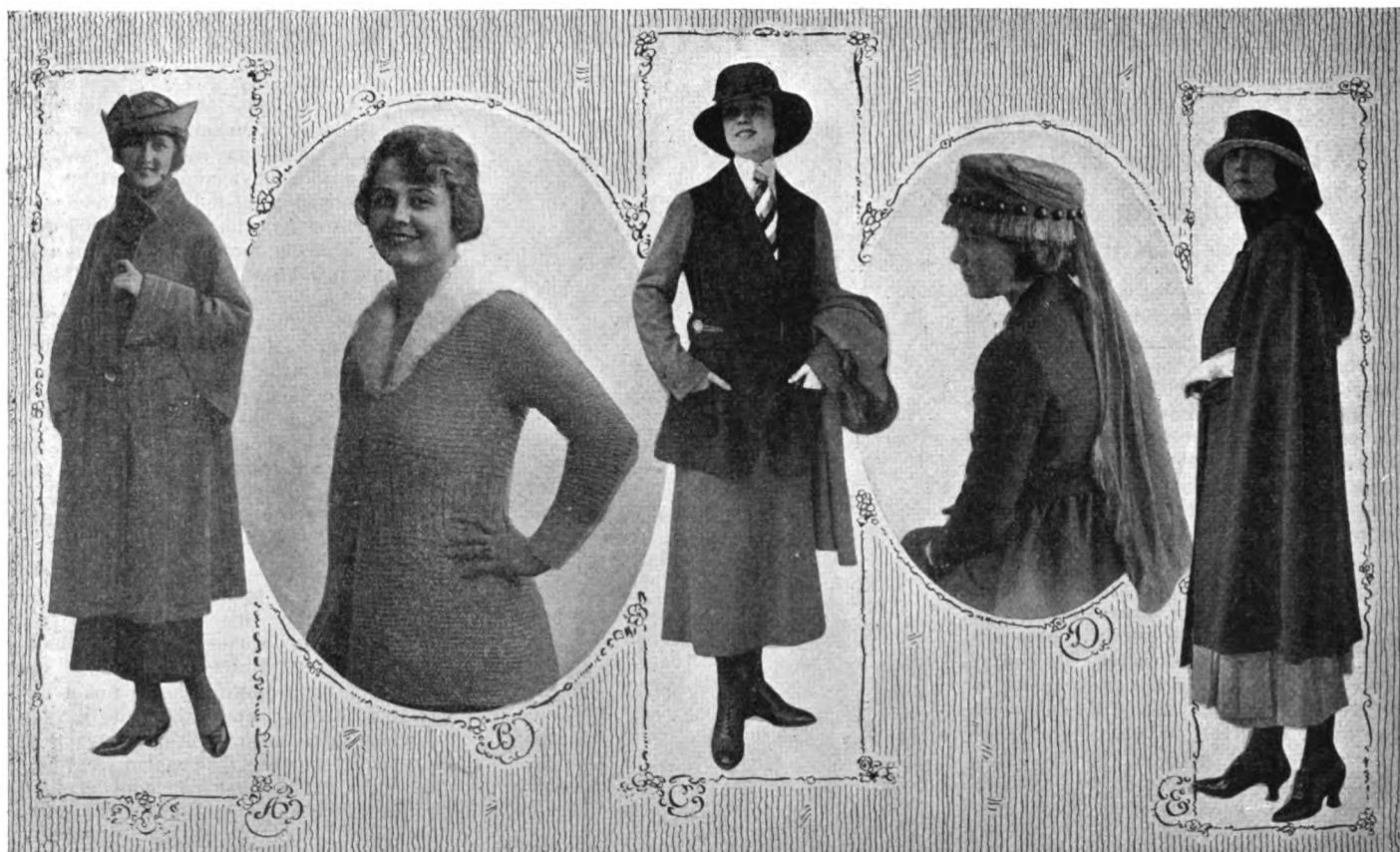
The top coat is a vital part of motor touring and it is to be seen in many fascinating models this season, and in a wide variety of fabrics. Wools, mohairs, tweeds, silks, linens and the new leathers. The woman who is not a novice at motoring knows that one may be sufficiently cold on a mid-August night to need the comfort of a warm wool coat. One substantial coat of wool material should always be provided, no matter how many of the charming creations in light weight serge, pongee or mohair the motor woman may be possessed of. Such a coat should invariably be carried in the tonneau, even in the warmest weather, for as soon as the sun drops below the horizon the thin frock may be covered with the smart, warm coat and one is well clothed for the remainder of the journey.

Worumbo Camel's Hair.

There is no material so ideal for motor wear as the Worumbo Camel's Hair, and there is nothing more greatly in fashion's favor this season. Thoroughly comfortable, extremely smart and so light in weight and soft in texture that they are not in the least cumbersome to carry or lift about. All the Worumbo cloths are to be highly recommended, for their wearing qualities are wonderful and they give entire satisfaction in every way. The new models are made in a variety of styles which do not differ greatly, save in minor details, as there seems to be a predilection for the plain, roomy garment, but all the newer coats have the loose back developed in one way or another.

They usually drop from yokes which sometimes are square and hold clustered shirrings, circular to link up with rolling pleats, diagonal at either side from which godets ripple, and flat at the base to permit a slot seam or tapering panel to be inserted. Some of the yokes accentuate the long shoulder line, dropping well over the shoulders and forming the upper part of wide armholes.

There are a very great many motor wraps built on the cape and dolman lines. A lovely Worumbo wool cape has a great collar, cowl in shape, reaching to the waist line in depth. Serge, taffeta and mohair are among the best materials for



A—Nothing Can Excel the Motoring Coat of Worumbo Camel's Hair; B, the Slip-On Sweater Is a Big Favorite with the Motorist; C, This Smart and Practical Coat Is of Suede Leather and the Sleeves, Skirt and Top Coat Are of Wool Jersey (Photo by Joel Feder); D, This Little Hat of Georgette Crepe Possesses Distinction, Style and the Most Practical Features; E, the Motor Cape Has a Popularity That Knows No Limit.

the summer motor cape. A sand colored taffeta has a deep collar, waist length in depth, of duvetyn in navy blue. Tricolette capes are also in demand and are decidedly handsome.

Nothing will appeal to the woman motorist more greatly than the very new "Americanette's." They are just being brought out and are the most smart and snappy garment imaginable. They come both in leather and in a leather and tweed combination, known as a reversible coat. The leather is a lovely soft flexible quality and is so light in weight that it is not impractical for summer. If desired the collar may be buttoned up close to the neck with its smart leather buttons, and the sleeves fasten snugly at the wrist. Every motorist should include one of the new Raynsters in her touring outfit. There are the most attractive models, combining smart style and practicability. The tweeds are made in various styles, giving the garment a far more attractive appearance than the average storm coat possesses. The silk rubbers are very handsome and are built on severe lines, their beauty consisting of the wonderful sheen of the fabric, while as a utility garment they cannot be excelled. There are also cashmeres and mohairs, all treated in such a manner they are storm proof.

Coats of White Oilcloth.

Perhaps the newest idea of all has just been launched by a noted designer, who advocates motor coats of white oilcloth, the very same simple and humble white oilcloth that covers the simple and hum-

ble kitchen table. A model just turned out of the oilcloth is about three-quarters length and is quite full. There are three belts—one at the natural waist line, one above and one below and all fasten at the front with a buckle. The collar may be brought up well about the neck and buttoned, or turned away and the points held down by buttoning to the coat. The sleeves have three little straps in place of a cuff and the straps buckle together, giving an effect similar to the belts of the coat. The lining is of a bright red satin, and a little motor hat accompanying the coat is also of the white oil cloth and red satin. The crown is of tucked satin and it is encircled by two wide bands of the oilcloth which fasten in front with a large buckle.

One of the newest things for the motorist is the Sweater Scarf, so-called, as it seems to answer both the purpose of the sweater and the scarf. It is all wool, three feet wide, nine feet long and is thrown over the shoulders like the old-fashioned shawl of our grandmother's day. It is gathered at the waist and held by the belt of the wearer's skirt. Among the very newest of garments for motor wear are wool knitted capes. They are full length capes and gathered to a large yoke and collar of brushed wool. The collar crosses in front, forming a surplice effect and fastens in the back, if preferred.

Belding "Nancette."

Serviceability and becoming effect count for much in motor frocks, and they must first of all fit the occasion.

The motorist should, of course, be provided with several, and for each trip select the one befitting that particular occasion. The simplicity and grace of a motor frock is its greatest charm, and the soft materials which are so fashionable are perfectly adapted for this use. The lovely new Belding "Nancette," which comes in the most delectable shades, is one of the smartest fabrics of the season. This lovely material is dressy enough to serve as luncheon or matinee frocks, when going in the car and is ideal for the dinner frock at the hotel when on a tour. The Belding Nancette is a rich, highly lustrous silk of individual weave, with most excellent wearing qualities and is to be highly recommended for the motorist. A charming and appropriate frock to include in the touring wardrobe is of navy blue Nancette, made in one-piece style and having a wide panel back and front. The panels are braided with the new pigtail brand in black in a handsome design and the ends of the panels are finished with wide black silk fringe. A picot edged sash encircles the waist and ties at the left side. The sleeve is long and tight fitting, for while much has been said regarding the return of the short sleeve, it has not been accepted by well dressed women for frocks of this character. The bottom of the sleeves and the edges of the sash are braided, and the neck is the modish "U" neck that is so popular at the present time.

For more severe wear, such as long distance touring and picnic parties, there is nothing better than the popular Nu

Vogue fabrics, which seemingly never wear out and always look surprisingly fresh under the most adverse circumstances. They combine charming color combinations and are in handsome plaids. A plaid, combining a dull green, brown and black, has a thread of old gold defining the plaids, and made very simply with tiny brass buttons for ornamentation, is wonderfully smart and fetching. Another Nu Vogue is a combination of blue, green and brown, with a thin stripe of red running through.

Devonshire Cloth.

The Devonshire Cloth is also another sturdy material, fashionable and attractive. There are many stripes and plaids, and in the plain colors there are some lovely shades. One motorist that I know includes three frocks of Devonshire Cloth in her motor touring outfit. They are made exactly alike, having a short skirt about two yards in width, and a plain waist with a tunic which falls to about five inches of the bottom of the skirt. There is a five-inch belt, set below the natural waist line, thus giving the desired long waisted effect. The sleeve is short and of the bell variety. The belt, bottom of sleeve and bottom of the tunic is braided in white cotton soutache and the waist buttons directly through the front with white pearl buttons. One frock is brown Devonshire, one is a deep blue and the other is rose.

In motor millinery the small hat is most popular with the average woman, but there are some women who like to have a little more dressy hat with them in case they go about a little when stopping in some city. When the larger hat is worn the popular idea is to cover it completely with a large veil of chiffon cloth when upon the road. This veil may be selected in some bright and attractive shades and is really wonderfully smart looking and preserves the hat from dust and sun. Kid is being used very successfully for motor hats. They are small, having the crown trimmed in cut-out kid flowers, which is an entirely new idea.

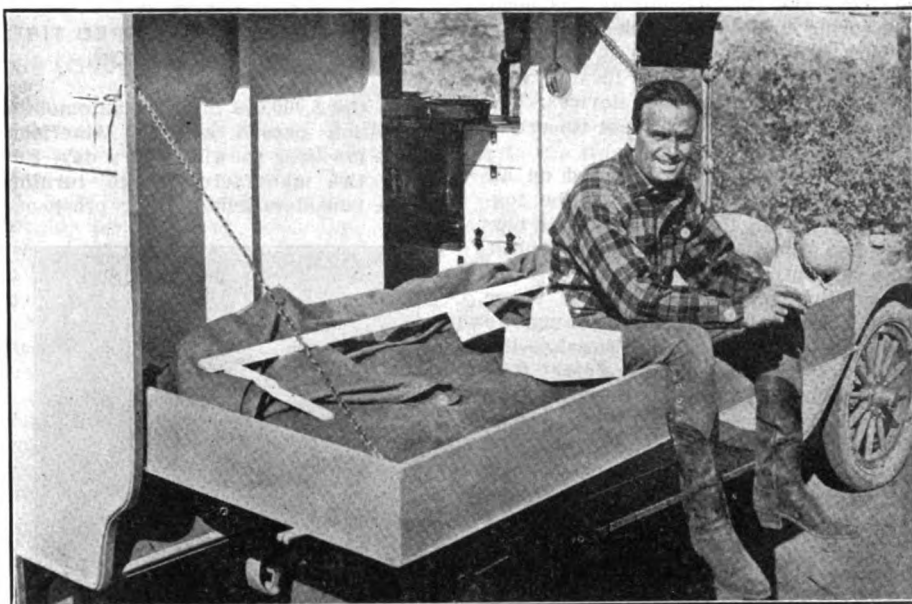
Tams Also Very Good.

Tams are also very good for motor wear and moire and taffeta are being much used. Veils are attached to motor hats for the greater part. A small turban of navy blue Georgette has an eight-inch veil of filet mesh drooping down over the face and a long Georgette veil at the back which may be wound around the head and neck if desired. Kid and taffeta combinations are prominently used in smart motor hats. Little sailor shapes with crown tips and upper brims of taffeta and crown sides and facings and sometimes button trims of the kid in contrasting color. Mesh veils are shown on these hats, with the front portion of the veil that fits under the chin on a neck band of taffeta or moire that fastens with a snap, the back part of the veil hanging free at the back.

Have you seen the Tweedie Boot Tops? Nothing has ever been invented which will give the motor woman greater satisfaction. Nearly all women prefer to wear a pump or oxford at all times,

DOUGLAS FAIRBANKS KNOWS HOW TO ENJOY HIMSELF WHEN TOURING

Popular Movie Artist Doesn't Have to Worry About Hotels and Restaurants When He's on the Road.



Douglas Fairbanks in His House Car.

DOUGLAS FAIRBANKS, the movie actor, doesn't worry about hotels and restaurants while scouring the western plains for suitable locations for his scenes. He travels in a "Dodge Brothers House Car," which is the name he gave the strange, but cozy vehicle designed and built for him by the Albertson Motor Co., Dodge Brothers dealer in Los Angeles.

As the illustration shows the walls of the car form beds when lowered. There is additional sleeping space inside, as well as a complete kitchenette, ice box, electric lights and all the conveniences of home.

The car seems to require no roads to travel on and has a faculty of taking Mr. Fairbanks exactly where he wants to go, regardless of whether the topography makes for smooth sailing or rough.

but wish protection about the ankles when touring and also when the days and evenings are chilly. Very many women do not like the regulation spat, and certainly in the majority of cases they are ill-fitting and decidedly dowdy appearing. The Tweedie Boot Tops are the acme of perfection in fit and appearance. They are made of the splendid Worumbo Wul-Buk in white, taupe, gray, chamois, fawn and champagne. There is no unsightly buckle and the appearance is of a smart cloth topped shoe. They conform to the shape of the foot as does a glove to the hand and are an accessory which no motorist should be without. The Tweedie Boot Tops may also be had in moire, corduroy and cordigan cloth.

The summer tourist who wishes comfort, as well as smart appearance, should

Mr. Fairbanks was all smiles when an interviewer asked him how he enjoyed his novel car.

"There's nothing like it," declared the noted moving picture star. "I have nearly all the comforts of home. I can go where I want when I want, and have nothing to worry about.

"I used to have to do a mighty lot of worrying about hotels, but never again. This is my own hotel, and it suits me in every respect. I would advise anyone who has to do a lot of traveling to have one rigged up just like it."

"Can you sleep as well in it as you could in a hotel?" he was asked.

"I sure can," was the response. "Why, I never slept better in my life than I sleep in this outfit. A hotel bed can't be compared with it."

wear silk gloves in a shade conforming to her other raiment. They are cool and comfortable and have the added attraction of cleanliness, for they may be washed out over night and present an immaculate appearance in the morning. Time was when the glove of silk was an ill-fitting and detestable affair to the particular woman, but if a first class make is selected the fit will be perfect and the wearing qualities all that one could ask. Attention should be given to the glove of heavy silk, for it is such a glove that will give the perfect fit and good appearance. The Mohawk silk gloves are without question the most satisfactory silk glove to be found. The quality is unusual and the embroidery on the backs is smart and new. They come in pongee, gray, tan, brown, silver and gold, with self or two-tone embroidery.

ROWE CALK AND CHAIN CO. TAKES OVER HI-LO JACKS.

The Rowe Calk and Chain Co. announces that it now has the exclusive manufacturing and selling rights for Hi-Lo Jacks, formerly manufactured by the Hi-Lo Jack Co., Worcester, Mass. For some time the Rowe company has been endeavoring to obtain a jack for passenger cars and trucks, which it would be willing to market alongside its now well known Prest-O-Grip traction devices. The Hi-Lo Jack was found to meet its exacting requirements.

The Hi-Lo Jack is constructed on an entirely new principle, that of the toggle joint. While the toggle joint is perhaps one of the oldest and simplest forms of applying power known to man, its use, the company states, has never before been embodied in an automobile jack. It is this feature which makes the Hi-Lo Jack unique in its field. The maker claims that there is no other jack made which increases in lifting power as the load is raised.

A Hi-Lo Jack which is made to lift two tons at seven inches will, the company claims, actually raise a load of five tons at 12 inches—the starting point of an ordinary jack. The Rowe company's announcement adds:

"Another important feature of this jack is its range of use. Although occupying no more room in a tool box than any other jack, the Hi-Lo Jack will start to lift its load at six inches and will raise it to a height of 17 inches. This is an invaluable advantage to the man driving a car or truck of underslung suspension, or one of low clearance. This feature also obviates the necessity of carrying two jacks in order to lift a car mired in the mud to within six inches of the ground; one jack to lift the car from the spring to a height sufficient to admit the other under the axle. Any driver who has had an experience of this kind will at once appreciate the value of a jack that starts to lift at six inches and lifts with ever increasing power until the limit of 17 inches is reached.

"Another advantage of Hi-Lo Jacks is the long handle, which is an integral part of the jack. The length of the handle gives greater leverage and allows even the heaviest loads to be raised with a minimum of effort. A frail woman finds her strength ample to lift a heavy touring car. The fact that the handle is attached firmly to the jack makes the placing of the jack directly under the axle a simple and a clean operation. This feature will be specially appreciated by the owner and driver of a pleasure car. No longer will it be necessary to get on one's knees on a dusty road in order properly to place a jack.

"Hi-Lo Jacks are now being manufactured and sold only by the Rowe Calk and Chain Co. of Plantsville, Conn. They are made in six different sizes and are so constructed that each jack has a large margin of safety over and above the load that it is supposed to lift. They are made of a combination of drop forgings, fine grade malleable castings and cold rolled steel, according to the high stand-

ard of the other products of this company. The Hi-Lo Jack is protected by a very full guarantee backed by the Rowe Calk and Chain Co. The application of the toggle joint principle to a jack is covered by patents so wide that no other jack of similar construction can be made."

BERGOUGNAN BUYS EQUIPPED TIRE FACTORY IN TRENTON.

With the 5,000,000 mark in automobile registration passed and the American market for tires growing every day, European tire manufacturers are turning from a consideration of their prospects



Raymond Bergougnan.

in the countries lately devastated by war to the larger opportunities offered here.

One of the largest, if not the largest, tire concerns in France, the Etablissements Bergougnan of Clermont-Ferrand, has taken the initiative and during the current month has consummated the purchase of a modern fully equipped tire factory in Trenton, N. J., where from now on the justly famous Bergougnan tires will be manufactured.

The Bergougnan company has a record that is as old as the automobile tire industry. Before the pneumatic tire's advent it was engaged in the manufacture of rubber stamps and other incidentals, but its real history begins in 1889 when tires first made their appearance on the roads of France. From a capitalization of 1,500,000 francs it has grown to a monster organization, with branches in every civilized country on the globe.

The founder of the business, Raymond Bergougnan, is one of the most progressive of the "captains of industry" of France. During the war he took in hand the supply of tires for the transport division of the French army, and it was in a great measure due to him that communication was kept open between Verdun and the supply depots in the rear. Night and day thousands of army trucks brought ammunition and fresh troops to hard pressed Verdun, and more than two-thirds of these trucks were mounted on Bergougnan tires. Mr. Bergougnan is an officer of the Legion of Honor, and is as active in the management of the Bergougnan establishment as on the first day of its organization.

In addition to the plant in Clermont-Ferrand, which covers 40 acres and employs 6000 workmen, the Bergougnan company operates factories in Moscow, Russia and Turin, Italy. The new Trenton factory is equipped to turn out 600 tires a day, but extensive additions are planned in order to permit the manufacture of solid tires, in which branch of the industry the Bergougnan firm enjoys supremacy.

Some idea of the importance of the concern and of the solicitude which it feels for the welfare of its employees, may be gathered from the fact that throughout the war it carried on the pay roll at half pay more than 800 of its men serving at the front and contributed 2,407,075 francs to the relief of their dependents and in various charities and welfare work.

A vigorous advertising campaign is being planned.

NEW YORK COIL CO.'S FINE LINE OF REPLACEMENT COILS.

Attention is called to the advertisement of the New York Coil Co.'s line of replacement coils appearing elsewhere in this issue. The New York Coil Co., one of the oldest manufacturers of ignition coils for all purposes, offers a line of replacement coils designed to be installed instantly without machine work of any nature on any make or model of car. These coils are carefully designed to fit and work properly in conjunction with the particular type of ignition system supplied on each model.

The windings, condensers and resistance units, it is claimed, are so proportioned that an extremely powerful spark is delivered under all operating conditions, and garagemen find that they are a solution to ignition coil problems.

New York Coils, the coil maker claims, invariably show a big improvement on any car upon which they are installed, and it is pointed out that by stocking a small quantity of coils suited to the cars upon which each particular repairman specializes, delay of securing proper coil is avoided and the repairman is enabled to give the customer prompt and efficient service.

A chart showing the proper coil to order for each car with other valuable information will be mailed to all readers of this publication who address the New York Coil Co., 338 Pearl street, New York City.



New York Coils.

How To Overhaul Car Before Starting On Tour

Usually Considerable Work Has to Be Done If Motorist Would Avoid Trouble on Trip

THE time given to putting an automobile in good operative condition before starting a tour of considerable length is well spent. Invariably there will be considerable work to be done about a car and its power plant if one is to be certain that a touring trip will have its fullest pleasures. If the car has been used to some extent its condition will be better understood. If a new car the engine may be at that point where it is running its best. No one should take a new car from the salesroom floor and start on a trip of any length. The engine should be thoroughly limbered by service. If one is to use a car that has been driven considerably there is every reason for going over it.

If a new car, the cooling system, no doubt, will be in first class condition and it will not be necessary to spend much time on it. If the car has had more or less of service it will be well to wash out the system with a solution of washing soda and hot water, using about a half pound of common washing soda to every four gallons of water. The radiator should be drained and the solution poured into the radiator and allowed to stand. If you believe there is considerable rust in the system, drive the car for a few hours or a day, allowing the heated solution to dissolve the rust and sediment. The following day drain out the solution, rinse with clear, fresh water several times and finally fill the system with clean water. This will usually be sufficient unless there are leaks in the radiator, in which event it should be repaired by one expert in repairing radiators. Such men will do a job they are willing to guarantee.

Examination of the Engine.

The engine should receive very careful attention, as upon it more than upon any unit of the car the pleasure of the tour depends. If a new car but little actual labor is needed except to see that the valves work properly, the carburetor

is properly set, the points in the breaker box are clean and adjusted and the engine is oiled and greased. If the car has been used more or less the carbon should be removed and the valves ground. This work may either be done at home if the owner wishes to do it, or the car may be taken to a repair shop.

At the same time the bearings should receive attention. If loose or worn they should be tightened or replaced with new. This applies to the main and connecting rod bearings. The pistons and rings and the wristpins and their bushings should be examined and cleaned. If rings are broken they should be replaced.

looseness, especially those that secure it to the frame. Be sure the engine has plenty of oil. An extra good grade of oil is best insurance against repair bills. Buy the best oil possible to obtain and use plenty of it. Plenty of oil is necessary just after the bearings have been adjusted.

The push rods will need adjusting after grinding the valves as the valve seats may be so low that the valves are held open. This adjustment is best made while the engine is warm.

The carburetor should be checked for any possible errors in adjustments and if errors are found take the car to a good

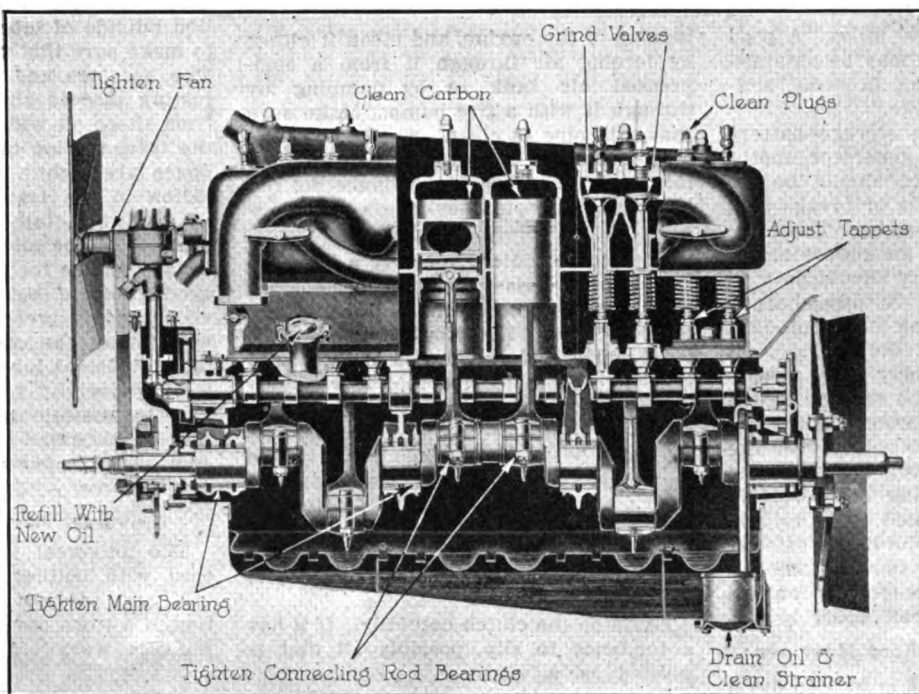
carburetor expert. A warm engine is necessary for a good carburetor setting. Never try adjusting a carburetor while the engine is cold.

The carburetor should be so adjusted it will not require further attention, and should be regulated for the section of country through which tour is to be made. A cold air such as is found in mountainous country will require more gas at the needle than will the air of a country that is fairly level and the temperature is more normal.

The condition of the starting and lighting system should be carefully checked. The brushes should be examined and if

worn too badly should be replaced. The commutator may be smoothed or, if covered with gum or oil, brightened with a strip of sandpaper held in place by a short piece of wood. The sand should be blown out after the work is completed. Oil soaked wires had best be replaced as such wiring may be the cause of many ignition defects. The timer should be examined and cleaned. This may be done with gasoline and a cloth or brush, making sure that all the gasoline has evaporated before replacing the cover. Many a fire has been caused by failure to dissipate gas put into a timer for cleaning it.

The generator and starter bearings should be oiled, which will usually suf-

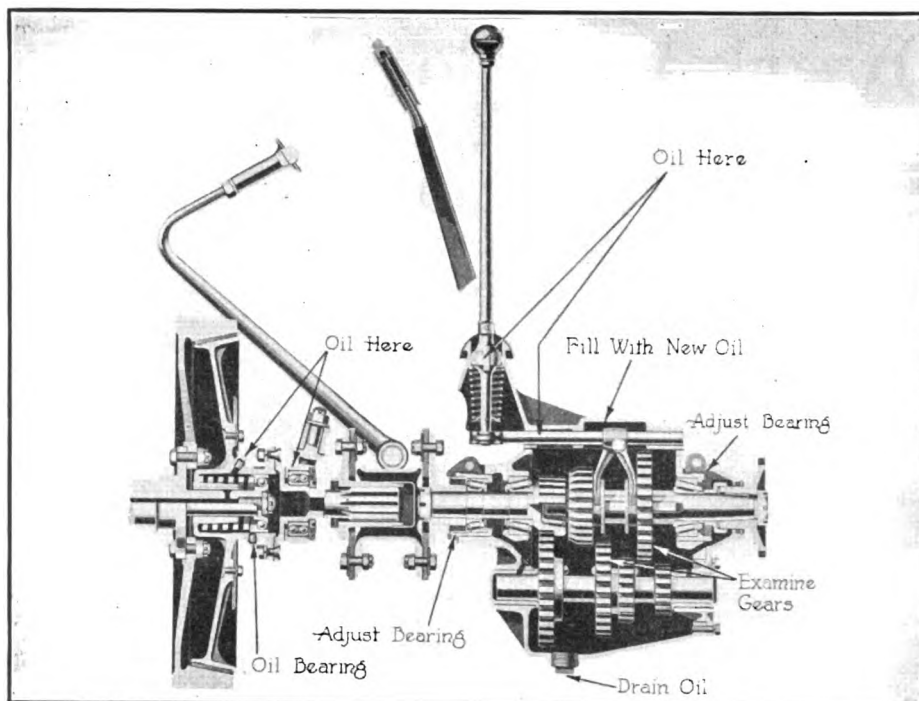


Parts Needing Attention on a Six-Cylinder Engine Before Attempting a Tour.

If scored cylinders are found they should be treated either by a patented filling process or else rebored and oversize pistons fitted. Wristpins loose in their bushings may be restored by fitting new bushings.

If the engine is a separable head type it will be well to examine the gasket beneath the cylinder head. If it is frayed or may leak it should be replaced. Examine the gaskets under the exhaust and intake manifolds for leaks. If they show weakness, renew them. If the gaskets are in good condition tighten the nuts that hold them in place, doing this work when the engine is hot as it is more certain than if the engine is cold.

Try all nuts about the engine for



Examine Clutch and Transmission Carefully at Points Indicated.

face for from 1500 to 2000 miles. A good grade of oil is best and may be obtained from any store handling firearms, sewing machines and the like.

The wiring from the storage battery to the switch, starter, generator, motor cutout, horn lights, etc., should be examined for short circuits or breaks and, if these are found, repaired. The horn and lights should be in good working order. The storage battery should be tested with a hydrometer. A fully charged battery shows a reading of about 1285 specific gravity, but if the charge will not turn the starter it may show a reading of about 1225. If the reading is low the battery should be removed and recharged from an outside source. At the low reading the lights will burn, but the starter will not turn the engine. The battery may also be tested as to its general condition and for the depth of sediment at the bottoms of the jars and the condition of the electrolyte by an experienced battery repairer.

Special Attention to Ford Machines.

If the car is a Ford it is well to drain the oil from the magneto case and flush it with kerosene. Remove the transmission cover to facilitate the work and replace the cover after the kerosene has been placed in the base. Turning the engine by hand for several minutes will remove all sediment on the sides of the base and particles of metal that may be on the faces of the magnets. Drain out the kerosene and refill the case with clean oil to the level shown on the gauge on the side of the magneto case. If by chance the engine supports are broken or cracked, either have them welded or purchase temporary brackets that may be used in case of a break. These may be purchased from any supply house.

Have a competent mechanic disconnect and take out the oil feed pipe that runs the length of the engine base, from a point over the flywheel to the front

bearing of the engine, and clean it either by forcing air through it from a compressed air tank or by pumping air through it with a tire pump. Make sure that this pipe is clear. The pipe is the only means for supplying oil to the timing gears, main bearings, connecting rod bearings, wristpins, cylinders and pistons.

The writer noticed recently a Ford engine where this pipe had become so filled with sediment that oil could not possibly flow. The result was that the two front cylinders were so badly scored that the owner decided that it would be more economical to install a new engine block.

This pipe may also be cleaned while in the engine by simply removing the base plate of the engine and forcing air through the pipe without taking it out. In fact, this is the usual method in Ford shops where the better class of work is done.

Examine the clutch carefully. If it has a tendency to slip, possibly all that is needed is a slight adjustment. If the lining is badly worn no adjustment will restore it. In such a case, if the clutch is a cone type, re-line it, being sure that the rivet heads are well down into the facing so that they will not prevent the clutch holding. If the clutch is a disc type and slips, adjustment may be made by tightening the nuts on the bolts on the front of the clutch. These may be located in the spokes of

clutch and are fairly easy to reach. Be sure that you tighten each an equal number of turns, otherwise clutch will not engage evenly and will wear unnecessarily. The disc clutch usually requires very little lubrication, which is supplied mostly at the bearings by means of grease cups. If oil is used, be careful not to get any on the faces of the discs, for oil will cause a clutch to slip.

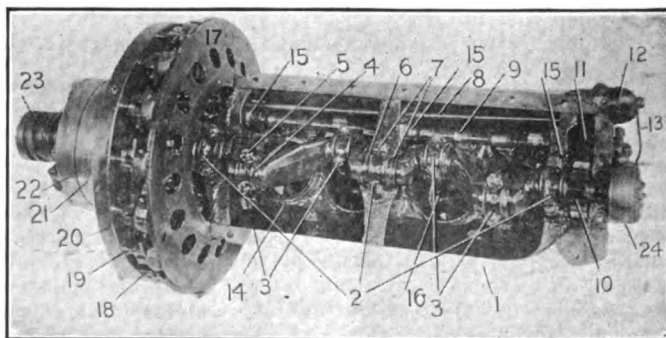
If the clutch is a cone type and engages harshly, this can be improved by softening the leather facing. Neatsfoot oil is best, but if not obtainable ordinary engine oil may be used. Hold out the clutch pedal and squirt a small quantity upon the leather and turn the clutch by hand until the face has been covered evenly. In Ford cars the high and reverse bands if worn badly should be replaced. The high speed clutch should be tested and if needed should be adjusted. This adjustment is made at the rear of the transmission gearset with the three finger arms. Turning the adjusting screws in will tighten the high speed clutch and turning them out will loosen it.

Transmission Must Be Lubricated.

The transmission rarely needs attention outside of lubrication, but it is well to make sure that it is in good condition. The bearings and stuffing boxes or adjusting sleeves should be examined, as from these oil will at times work out of the transmission case. Make sure these boxes are tight. Have sufficient lubrication in the transmission case. That is, that it is full to the height recommended by the manufacturer, which will usually suffice for 1500 to 2000 miles. A good grade of steam cylinder oil is advised and is preferred to grease, as it will follow the gears better and give them sufficient lubrication. This applies more especially to all types of sliding gear transmissions. The Ford transmission is lubricated by the same oil as the engine and receives its supply from the same source.

Universal Joints May Be Worn.

The universal joints are usually covered with leather boots or steel housings and one not familiar with the action of a worn universal may not know a joint is worn. A repairer can get a



1, Cylinder Block Flange; 2, Main Bearings; 3, Connecting Rod Bearings; 4, Connecting Rod Cap; 5, Connecting Rod Cap Bolts; 6, Main Bearing Caps; 7, Main Bearing Cap Bolts; 8, Oil Tube; 9, Camshaft; 10, Crankshaft Timing Gear; 11, Camshaft Timing Gear; 12, Breather or Filler; 13, Timer Case Clamp; 14, Piston; 15, Camshaft Bearings; 16, Wristpin; 17, Magneto Field; 18, Magneto Field Coils; 19, Magneto Magnets; 20, Flywheel; 21, Slow Speed Drum; 22, Brake Drums; 23, Clutch Spring; 24, Engine Starter Drum.

rough idea of the wear by turning the shaft as far as it will go by hand and reversing the motion. If there should be any appreciable play the joint had best be taken apart and new parts put in or else rebushed. After fitting the leather or steel jacket fill it with cup grease. Or, if cup fed, fill the compression cup and screw it down two or three times so that the grease may reach every part of the joint.

Differentials and Rear Axles.

The differential gearset should be examined for broken teeth in the large bevel gear or in the pinion. If teeth are broken the gear or pinion should be removed and new installed. If the teeth are chipped at the corners the gears should be removed and the rough edges ground off on a carborundum stone. The gears can then be replaced and fastened securely with either hot or cold rivets. Hot rivets are decidedly the better, but cold rivets have been used by repairers with good results. The old grease should be removed and the case filled with fresh grease. Steam cylinder oil is the best lubricant to use for the differential gearset, as it clings to the faces of the gears and thoroughly lubricates them and the bearings at the side of the differential housing.

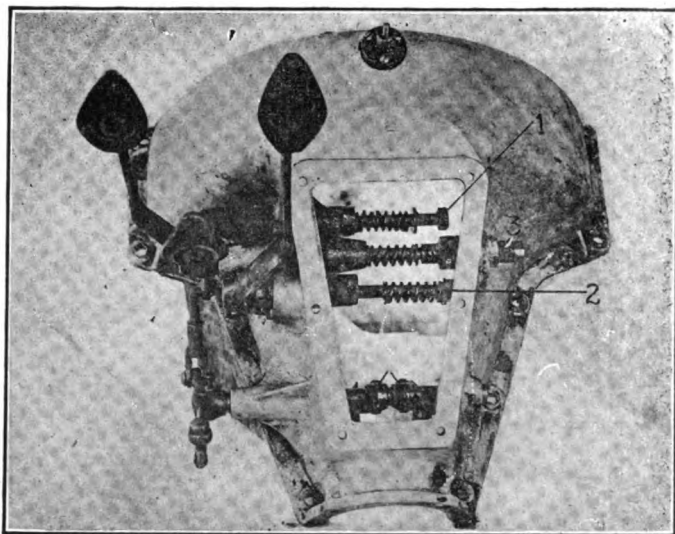
The bevel ring gear should be examined and adjusted if the gear and pinion do not mesh properly. This may be done on most differentials by an adjustment at one side, forcing the bevel gear either closer in mesh with the pinion or farther away from it.

Attention should be given the axles. If the wheels do not run true or the spindles are sprung, it is best to supply new axle shafts. Examine the bearings at each end of the rear axle and be sure that they are in good condition and are not excessively worn. Be sure that lubrication is supplied them. See that the castellated nuts that secure the wheels to the rear axle shafts are seated tightly and the cotter pins are in place if the axle is a semi-floating type. If either three-quarter or full-floating type, see that the bearings on the axle housing are sufficiently lubricated and the wheels are securely fastened to the axle shaft by the nuts and bolts that extend through the hub of the wheel, or by the plates retaining the bearings.

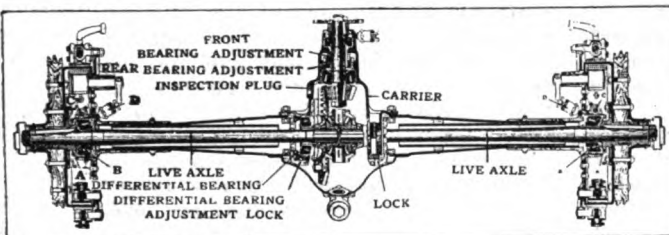
It is very essential that the brakes

should be in the best condition and they should be critically examined. Examine the service brake, first by noting the thickness of the lining. If worn thin reline the shoes as this brake will do most of the work. After relining they are to be adjusted. Jack both rear wheels and block the front wheels so the car cannot roll ahead. Have a second person set in the driver's seat and work the brake while you make adjustment with the turnbuckles on the pull rods under the car. When finished the brakes should pull even, locking both wheels when the pedal is about half depressed.

If the emergency brake needs relining make this restoration. Adjust it in the same manner as the service brake, making sure that the wheels lock when the lever is pulled about half way. If



1, Reverse Adjusting Nut; 2, Brake Adjusting Nut; 3, Slow Speed Adjusting Nut.



Examine Rear System Carefully at Points Indicated

one is to tour in the mountains good brakes are a necessity and it is well to try them daily when on the tour and if necessary set them so they will always be in condition to use.

Chassis Inspection.

Look over the chassis carefully and tighten all loose nuts. Some will have worked loose. See that all castellated nuts are fitted with cotter pins of the right size and bent so that they will not slip out. Note whether the frame is cracked or bent and, if so, have it repaired. Fill the spring grease cups and make sure that the grease enters the spring bearings. See that all spring shackles are tightened and cotter

pinned. Examine all grease cups and see that they are filled and turned down daily. This applies to all slow moving bearings and is very essential. All pin-hole oilers should receive a few drops of oil daily, but not so much that the oil will flow outside.

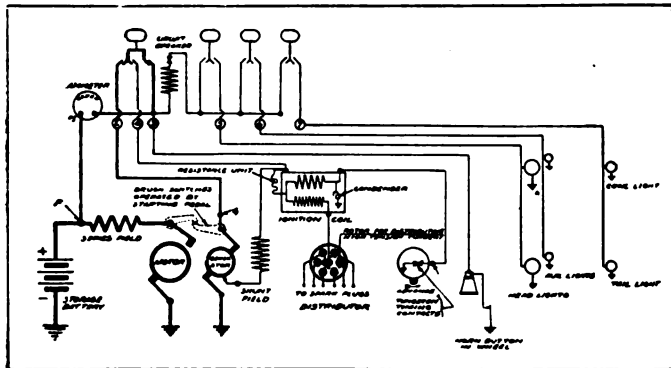
Be sure the steering gear is adjusted and lubricated. Examine the ball joints

at each end of the drag link at the end of the steering arm and the tie rod. Notice whether these are worn out, of round and if worn either renew or grind them round. Then tighten them securely in place and lubricate them. Examine the tie rod that connects the steering spindle arms of the front wheels. See that the joints have plenty of lubrication and are not worn too badly. There are various ways of taking up lost motion at these points, but probably the better and most satisfactory way is to put in new parts.

It is a good idea to check the alignment of the wheels and more especially the front wheels. It is not a long process and may mean a considerable difference in the wear of the front tire casings. There are two methods of doing this and that most used in garages is a heavy string or cord long enough to reach from the front to the back of the car. Place a weight, either a nut or bolt, securely fastened, at one end of the string and slip it through the spokes of the rear wheel. Pass it around the rim about half way from the floor to the hub of the wheel. Draw the string tight against the front edge of the tire of the front wheel. Turn the wheel till the spring bears evenly against both sides of the tire. Change the string to the other side of the car and repeat the process, but without changing the front wheel. One can see whether the wheel is in or out of alignment by the bearing of string against the sides of the front wheel. One may purchase aligning equipment that will possibly do this more accurately. Several are now in the market.

Tire Casings and Tubes.

If you have a car that is new or nearly new, the tires and tubes will probably be in good condition. But if the car has been used considerably the casings will be worn. The shoes should be examined for cuts, abrasions, stone bruises, sand blisters and the like. If found they may be repaired either by vulcanizing or by



Wiring Diagram of Delco System of Starting and Lighting.

treatment with some one of the various equipments or preparations sold by accessory supply houses.

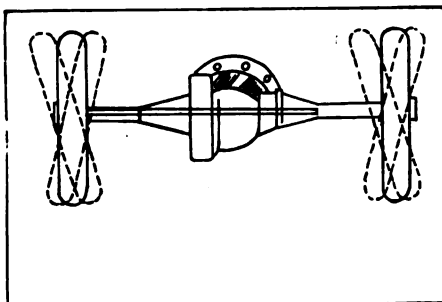
If the casings are badly worn it will be best to purchase one or more new shoes and carry them in tire holders on the car. You may be far away from a garage or service station where casings may be purchased and have a tire fail. Run the old casings till they blow out or are no longer serviceable and then replace them with the new shoes and in that way get all the mileage that they will give.

Tubes are always necessary and two or three should be carried in the car, either in the boxes in which they are purchased or specially made bags. The bags keep them from chafing and protect them from oil. Tubes should be packed folded standing on edge and sprinkled with talc powder, to prevent them chafing. Do not let them come in contact with greasy rags or loose tools.

Extras Desirable for Touring.

The motorist intending to make a trip of considerable length, and possibly leave the beaten paths of travel, will do well to carry a small supply of extras with him such as a set of extra plugs. Possibly the engine requires a plug of special make and by having a set with you you will be insured against inconvenience. Make sure the tool kit is complete, that you have sufficient wrenches, tire tools, jacks, pumps, etc.; that the tire and tube kit includes a small vulcanizer, patching rubber and cement, patches and the necessary abrasive for roughening the rubber.

Purchase covers for the spare shoes if you have none, as bright sunlight will damage casings quickly. Carry an extra supply of oil in a gallon can. It will be handy in case of emergency or if you cannot purchase the oil you have used. It is good judgment to have a gallon can of gasoline for emergencies. It may serve you well when vulcanizing a patch to a tube, as it saves getting gasoline from the main tank. A small can of cup grease, a supply of clean waste and a



Result of Bent Axles Showing Excessive Wear on Rear Tires.

can of roadside cleaner for washing the hands will also be very useful.

A tool box sufficiently large for all the necessary tools and extras should be placed on a running board, with a carrier ample for the luggage of the party. These may be purchased at slight expense, add to the appearance of the car and are great conveniences.

There are articles innumerable that may be purchased by the motorist intending to tour, among which is the auto tent, auto camp stove, collapsible boat, fishing table, prepared and canned food of various sorts, etc. Such articles may be carried either in the tool box or stored in a special box fastened to the rear of the car. Most of the automobile tents suitable for auto trips are made in such a manner that it is unnecessary to carry tent poles, such poles as are required being cut at the camping site and the tent being erected in such a manner that use is made of one side of the automobile. Again one may use a trailer attached to the rear of the automobile by a short pole that will carry whatever tenting supplies, cooking utensils, stove, etc., as are required for the trip. Some trailers are manufactured on a very elaborate scale, having sides that open and form beds, and a tent covering that covers the trailer as a whole. The trailer is used at night for sleeping quarters and during the day carries the tent and supplies to the next camping site.

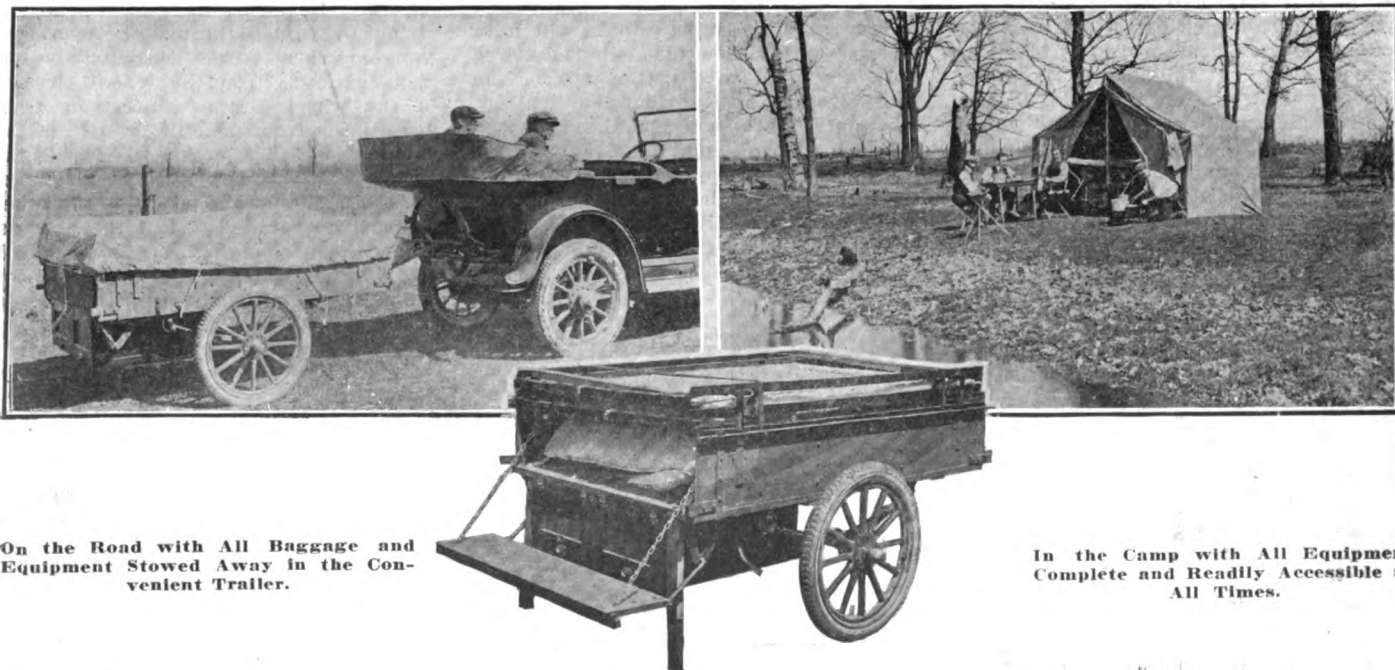
Fresh supplies, such as milk, eggs and vegetables may be purchased from farmers along the route and other supplies may be purchased from storekeepers in the towns or cities through which you pass, so that one may live out of doors from the start to the finish of a trip without having to stop at hotels. Many motorists enjoy their vacation trips in this manner, returning refreshed both in mind and body by the healthy outdoor life.

Remember that morning and evening, in high altitudes especially, or stormy days, call for added wraps. Carry sweaters, raincoats and rubbers. It might be necessary to change tires in rain and mud, if nothing else.

Because of the multitude of cars on main highways, more comfort and less dust would be had by planning a trip off beaten paths, for there are plenty of good, or at least fair, roads not mentioned in the average tour suggestion. They are shown in the guide books, and one may prefer less company and more opportunity to enjoy nature at her best.

Above all do not plan a trip which calls for top speed to make the stops. Rushing around to get somewhere for lunch so there will be time to get to some other place to sleep is too much like a race. Allow lots of time, and if you get ahead of schedule hunt out beauty spots for a visit. Between Port Jervis and Delaware Water Gap there are four or five side trips to charming waterfalls and spots where folks rave over nature's handiwork. Almost none of the tourists passing over the fine state road ever see the real beauties of the trip, being in a hurry to get somewhere for a good meal. In a land where every hotel is good the leisurely tourist misses no gastronomical delight and gets all the other delights.

Summed up, the requirements of the perfect tour are working knowledge of your car, equipment for quick repairs or adjustments and time to enjoy yourself.



On the Road with All Baggage and Equipment Stowed Away in the Convenient Trailer.

In the Camp with All Equipment Complete and Readily Accessible at All Times.

ALLEN 43 HAS MARKED IMPROVEMENTS

WITH the news, recently published, of Allen Motor Co.'s move from Fostoria to Columbus, O., where a big plant was equipped for large production, there have come many queries as to the type of car to be manufactured.

The new Allen model, a five-passenger touring, known as series 43, is in no sense a continuation of past Allen models. Practically every detail of the car, from the motor and transmission built in this company's own shops to the body and general lines, has been radically changed.

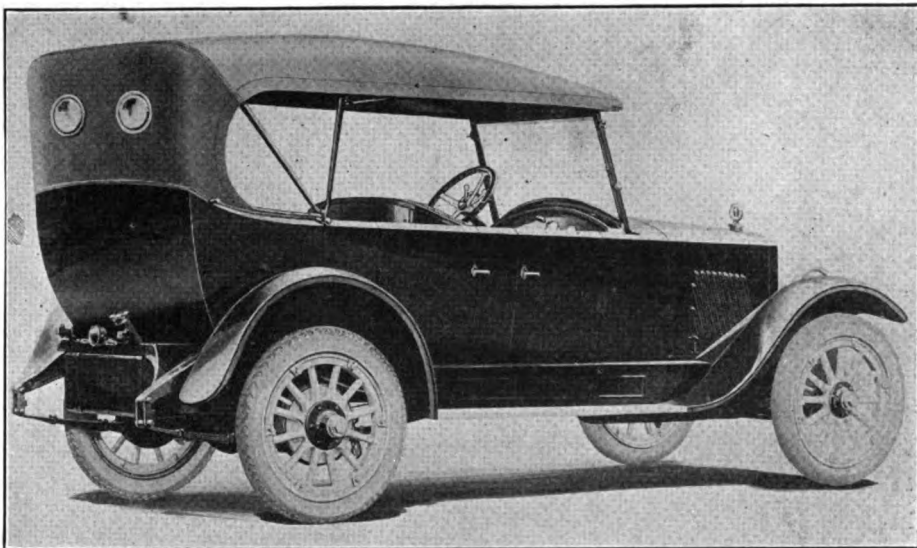
The motor is an economical "four" of $3\frac{1}{2}$ -inch bore and five-inch stroke, but with three bearing crankshaft instead of two, and with a "superheated" intake, which latter feature probably accounts for a grade of performance that is extremely unusual. The superheating of the gases gives greatly increased efficiency. It gives economy and develops exceptional power.

A fully equipped Allen touring car with normal load gave the following results in factory tests: A car speed of better than 60 miles an hour; the ability to accelerate from standstill to 40 miles an hour in 20 seconds and to 58 miles an hour in 52 seconds. The car went over the Uniontown Hill in Pennsylvania at 31 miles an hour, which must be recognized as a remarkable performance since the car that can negotiate this hill "on high" at any speed is rare and many of America's best hill climbing cars have never made a record as good on this hill.

But more to the point is the nicety of engine design which gives maximum torque, which means pulling power and economy, at all car speeds between 12 and 36 miles an hour.

The Allen engineers state that they could raise the pulling power at high speed, were it desirable to do so, but to maintain highest efficiency and hold it at all normal driving speeds is the ideal condition and one that has been attained in this car.

Notwithstanding the exceptional performance this Allen is not over powered as might at first be imagined. It is sim-



Three-Quarter Rear View of Allen 43 Touring Car.

ply a case of building a motor whose efficiency is beyond that formerly considered possible. This new Allen shows that the war period was not wasted from an engineering standpoint. While production was down the designers were busy preparing a finer type of light car.

The illustration of this car shows its good looks. The lines are new and in accord with the best advances in body design noted in other quarters.

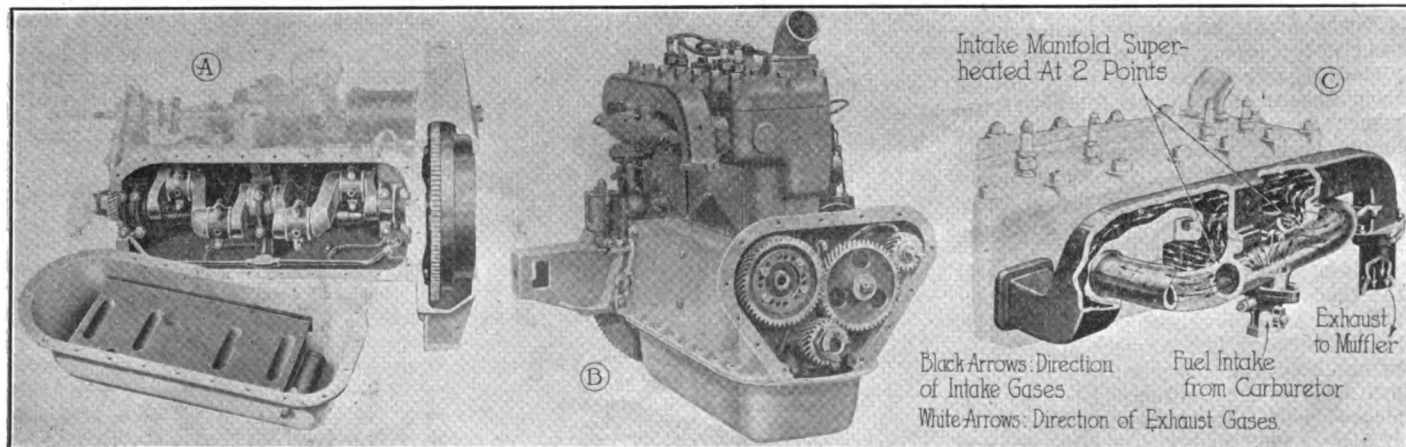
The maker claims for this car a riding ease that is attained without resorting to lengthy wheelbase. The rear springs, for instance, are said to be the longest in proportion to wheelbase. Because the springs are nearly flat they obviate rebound and the car rides very smoothly even at high speeds.

The frame is unusually deep and rigid. The maker claims to have overcome entirely what in the past has been a prevailing fault, that is, making the body stiffen the frame. This Allen frame is so stout that it stiffens the body rather and does away with body creaks and sticking doors which are always a direct result of using a semi-flexible frame.

Mention of a few of the mechanical

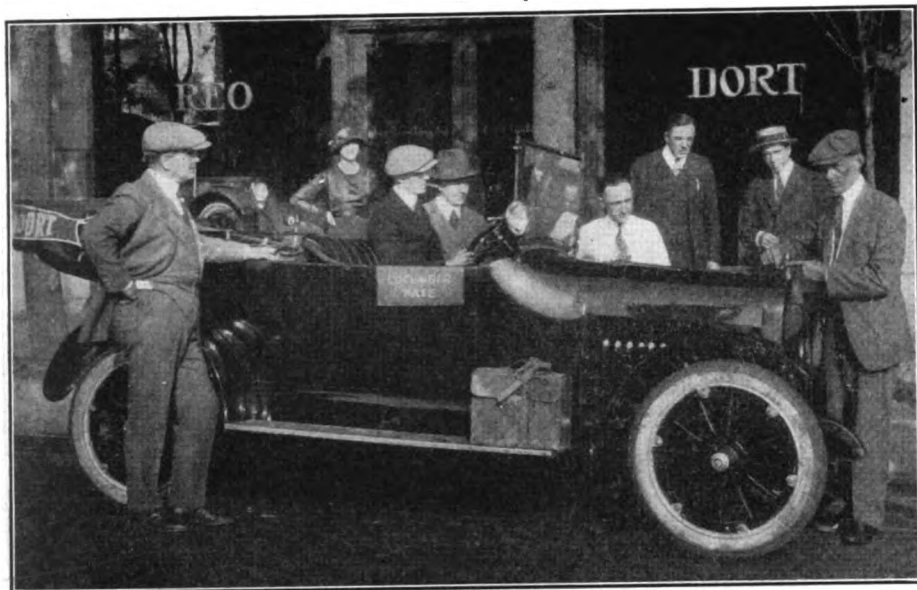
units and equipment may serve to indicate some of the high points in design: Pressure system of lubrication in the motor; oil cups instead of grease cups on spring shackles; 10-inch dry disc clutch; transmission in unit with the motor with speedometer drive from the rear end of the main transmission shaft; Auto-Lite two-unit starting and lighting; Connecticut ignition system; thermo-syphon cooling with ample water jackets around valves as well as cylinders; worm and full gear for steering; pressed steel housed rear axle of full floating type; full Hotchkiss drive with two Detroit ball bearing universals which are made to hold their lubrication instead of throwing it off; Stewart vacuum fuel feed; 32x4-inch tires; one-man top with plate glass rear windows; full crowned fenders and aluminum covered running boards.

The car ready for shipment, weighs approximately 2580 pounds and is finished in dark blue and black. The Allen Motor Co. reports an unusually heavy car demand from dealers and distributors.



A. Crankcase with Oil Pan Removed; B, Showing Timing Gears; C, Superheated Intake.

"CUCUMBER KATE" MAKES FINE RECORD AS SCOUT CAR



Dort Touring Car Known as "Cucumber Kate."

TOTALING 4000 miles in a month, "Cucumber Kate," the Dort touring car used by Earle C. Anthony, Dort distributor for California, as a scout car, has hung up an enviable record on the coast. The first official contest in which this Dort entered was the Stockton-Yosemite Reliability Run, through the steep Chowchilla mountain district into the heart of the Yosemite valley.

The going was very severe in places, especially the mountain passes and through the desert tracts where for nine miles the car had to run on low gear, but despite this the water in the radiator was always at summer heat, as shown by the motometer. Here the Dort defeated all cars below \$1200 in price and was awarded first place in its class. It was on this run that the name "Cucumber Kate," was applied, because the motor was always cool as a cucumber.

A few days later the Dort entered the Economy Run from Los Angeles to Yosemite and for the 375 miles averaged 24.3 miles to the gallon. This was in company with an A. A. A. observer with hood and motor sealed, and gasoline only being taken on at certain places along the way.

Not content with these various records, "Cucumber Kate" has just completed a record-breaking trip, running from Los Angeles to San Francisco and return in 34 hours elapsed time, four hours of which were passed to San Francisco and Oakland. Outside of this only one stop was made for a tire change when a lot of loose rock on a turn in the highway punctured one of the casings.

The new Dort record beats the time of the fastest trains on the coast, the Owl and the Lark, Southern Pacific specials plying between Los Angeles and Frisco, by one hour and one minute.

Naturally, Mr Anthony is very well pleased with the splendid performance of his car, and the Dort manufacturer is also happy over the record.

Pointers on Adjustment of Carburetors

WHEN touring, especially in the mountains, it occasionally becomes necessary because of changes in climatic conditions, for the motorist to adjust his carburetor. This is a delicate operation and one which easily may result in more trouble than good unless it is done properly.

The Beneke & Kropf Manufacturing Co., maker of Rayfield carburetors, has issued a few simple instructions on carburetor adjusting which will prove of great assistance to the tourist. The instructions follow:

"Before a Rayfield carburetor leaves the factory the float level is correctly set and should never be changed. If the carburetor does not give the desired results the motorist should write the factory or get in touch with the nearest service station.

"On the Rayfield water jacketed carburetor, model G, there is no air valve

adjustment and only two gasoline adjustments, one for low speed and one for high speed. In making these adjustments it is important to remember that both are turned to the right for a richer mixture.

"Before adjusting the carburetor the motorist should be sure that there are no obstructions in the gasoline line, that the manifold connections are absolutely tight and free from air leaks, that the valves and ignition are properly timed and that there is a hot spark and good compression in all the cylinders.

"Carburetor adjustments should always be made with the dash control down and the low speed adjustment should be made before regulating the high speed.

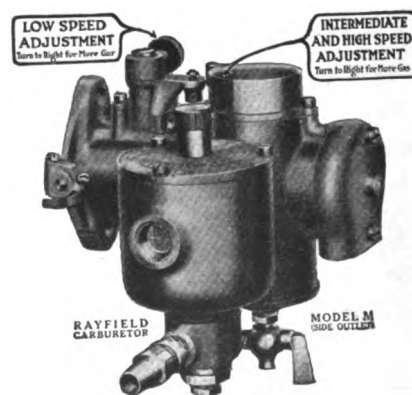
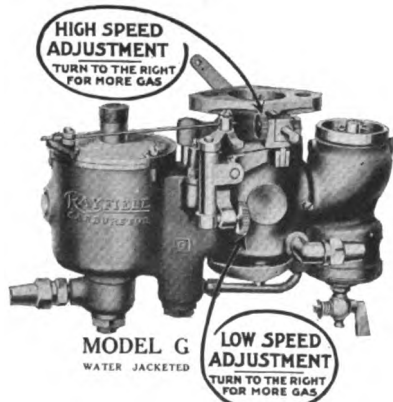
"In adjusting the low speed on model G proceed as follows:

"With throttle closed and dash control down, close nozzle needle by turning low speed adjustment to the left until the block slightly leaves contact with the cam. Then turn to the right about three complete turns. Open throttle not more than one-eighth. Prime carburetor by pulling steadily a few seconds on the priming lever. Start motor and allow it to run until warmed up. Then with retarded spark close throttle until motor runs slowly without stopping. Now, with motor thoroughly warm, make final low speed adjustment by turning low speed screw to left until motor slows down and then turn to the right a notch at a time until motor idles smoothly. If motor does not throttle low enough, turn the stop arm screw to the left until it runs at the lowest number of revolutions desired.

"In adjusting the high speed advance spark about one-quarter. Open throttle rather quickly. Should motor back-fire it indicates a lean mixture. Correct this by turning the high speed adjusting screw to the right about one notch at a time until the throttle can be opened quickly without back-firing.

"If loading (choking) is experienced when running under heavy load with throttle wide open, it indicates too rich a mixture. This can be overcome by turning high speed adjustment to the left.

"Adjustments made for high speed will in no way affect low speed. Low speed adjustments must not be used to get a correct mixture at high speed. The adjustment of the Rayfield cannot



Illustrations Indicate Proper Way to Make Adjustments.

change. Both adjustments are positively locked.

"The Rayfield side outlet carburetor, model M, also has two adjustments, one for low speed and one for intermediate and high speeds. A locking device holds the adjustments absolutely in place once they are made.

"The low speed adjustment on model M should be turned to the right or left as required until motor runs properly at low speed. Allow motor to become thoroughly heated, then make final adjustment by turning low speed screw to the left until motor slows down; then turn to the right a notch at a time until the motor idles smoothly. If motor does not throttle low enough, turn stop arm to the left until it runs at the lowest number of revolutions desired.

"The high and intermediate speed adjustment is made accessible by removing the hot air elbow from over the main air valve. Do not move the high speed screw more than one-eighth turn at a time. Turn it to the right for a richer and to the left for a leaner mixture. This setting, being very effective, will greatly determine the fuel economy; therefore, make sure it is set as lean as possible, still retaining good acceleration.

"On any model the Rayfield dash control, when properly used, will render easy starting, furnish a richer mixture when the motor is cold, and maintain a correct mixture under the most extreme atmospheric changes. To start the motor when cold first close the throttle and pull the dash control all the way up. Then, when the motor starts, open the throttle slightly and push the dash control one-quarter of the way down. As the motor warms up push the control gradually as required. When thoroughly warm push the control all the way down. When the motor is warm it is necessary to pull the dash control only part way up for starting.

"In more than 1000 Rayfield service stations all over the country skilled mechanics are ready to give expert advice to tourists. If carburetor trouble develops it is generally better to have it corrected at one of these stations, rather than to attempt to change it without advice."

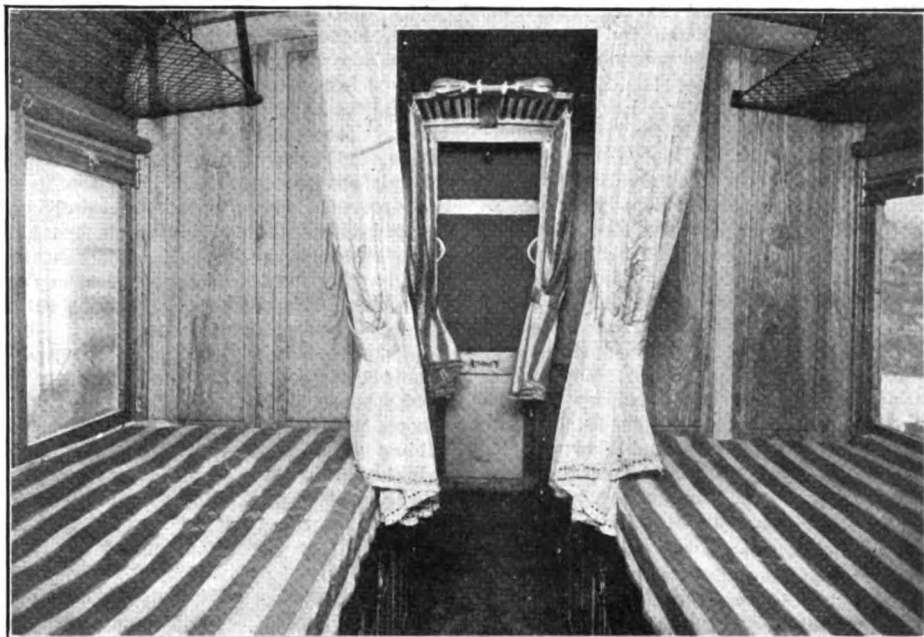
Webber Carburetor Has Become Favorite

THE Webber carburetor has gained wide popularity because of the satisfaction it has given to its great army of owners. It is made by the Webber Manufacturing Co., 66 Stanhope street, Boston, which has always taken pride in the high quality of its products.

The model E carburetor is made to give splendid service. The high standard of workmanship necessary in an instrument of this grade is strictly maintained and only materials which are the very best for the duty which they perform are used in this instrument.

As the useful life of a carburetor depends largely on the materials used in

MOTOR TRUCK TRANSFORMED INTO "HOTEL ON WHEELS"



"Hotel on Wheels."

THE accompanying picture shows the interior of a motor truck called the "Hotel on Wheels," which is conveying C. G. Barley, president of the Indiana Truck Corporation; Mrs. Barley and Mr. and Mrs. Harry Goldthait of Marion, Ind., on a round trip from Marion to California, a total of 4000 miles.

It is complete to the last detail. There are sleeping compartments for four persons, with glass windows that can be raised and lowered in the side of the body. Beneath each sleeping compartment is a commodious chest for clothing. At the rear of the body is a complete kitchen equipment.

The rear is also equipped with a motorcycle for special errands that may take the driver of the truck off the main line of travel. A complete Delco light-

ing system, which furnishes 25 electric lights, is utilized, with batteries, generator and motor. Compartments on the outside of the truck contain tools, ropes and various other equipment that is likely to be needed.

The truck is equipped with water tanks and pumps and modern sanitary plumbing. It rides on very large Firestone pneumatic tires. A large tent fly can be stretched from the top of the truck to a distance of 10 to 15 feet away. The driver sleeps on an especially devised seat which can be turned into a bunk at night. This unique body is mounted on a two-ton Indiana truck chassis, the frame having been lengthened to meet the body requirements. It is equipped with shock absorbers.

its construction, in the Webber the float valve seat is made of monel metal, a very tough, close grain and non-corrosive metal, ideal for this purpose, but difficult and costly to machine.

The float valve is also made of monel metal and is fastened universally in the float valve thimble, so there can be no tendency to wear either valve or valve seat out of round, and consequently they never leak. The float is of spun copper, annular in shape and so designed that all seams are always above the fuel level. Each float is twice tested before assembling.

The air valve is of aluminum and very light, so air valve inertia is reduced to the minimum. All wearing parts which could affect the adjustments are of hardened steel, to give long and hard service without showing signs of wear. All other wearing parts are of high grade bronze bearing metal.

With the Webber the engine starts easily in any weather without the aid of auxiliary priming devices because, in

starting, the fuel orifice is greatly enlarged, but the air passage is not restricted, this allowing the air stream to pick up sufficient fuel and carry it to the cylinders.

Real economy and numerous other features also mark this highly dependable carburetor. The instrument is easily adjusted. An interesting feature is that test made by the company has shown that altitude has so little effect upon the Webber that adjustments carefully made at the seashore cannot be improved upon in the mountains.

Webber carburetor distributors include the following:

Jones Auto Supply Co., Oakland, Cal.; W. S. Smith, Denver, Col.; B. K. Sweeney, Denver, Col.; Motor Inn Garage, Davenport, Ia.; H. H. Van Vechten, Albany, N. Y.; J. Lawrence Hill, Rochester, N. Y.; P. J. Shields, Syracuse, N. Y.; Webber Sale Co., 146 W. 56th street, New York City; Shields Garage, New Hampshire; Johnson Bros., Springfield.

NEW ENGLAND SAVOLD TO HAVE MANY FACTORY SERVICE STATIONS

THE New England Savold Tire Co., recently organized by prominent Boston business men and financiers to operate under the Savold process, will eventually have factory service stations in 20 cities from Bridgeport, Conn., on the Boston Post Road straight through to the Canadian line. In Connecticut service stations will be established in New Haven, New London, Hartford and Bridgeport, and in the State of Massachusetts in Boston, Springfield, Worcester, Haverhill, Newburyport, New Bedford, Lynn, Lowell and Lawrence. In New Hampshire stations will be located in Portsmouth and Manchester, while other factory service stations will be operated in Burlington, Vt., and in Providence and Newport, R. I. Four cities in Maine, Portland, Augusta, Bangor and Bar Harbor, will each have a Savold service station.

The headquarters and executive offices of the New England company are located in the Savold Tire building, 96-98 Brookline avenue, Boston. Following is a description of the Savold process:

"The tires given to be remade are first passed upon by a man, who is trained by years of experience, who in turn trains other men, passes on the tires that it is possible to remake so as to secure economical results to the user. After the tire has been passed by the inspector it is taken to the department where the tread is first removed by men who cut off the tread, after which it goes to men who, by the use of rotary power rasps and wire brushes, remove all the tread and cushion down to the fabric which composes the carcass of the tire.

"If it is found necessary to remove any of the fabric plies, by reason of separation or for any other cause, its place is taken by a new fabric. Before this is done, however, if there are any breaks in the fabric carcass such breaks, or ruptures, are carefully stepped down, after which the carcass is thoroughly dried, by the use of heat, to remove any moisture which the tire has absorbed while in use. This is absolutely necessary and vital, as proper adhesion cannot be secured if the old carcass is not thoroughly dried. When the tire is thoroughly dry it is carefully washed off with gasoline, or benzol, and is then cemented with a patented solution. It is necessary to use at least four coats of cement with an interval between each coat to permit of each being dried before the next coat is applied. This work is done in a room in which the temperature is from 80 to 100 degrees, as it is necessary to have this work done at this temperature so that the cement carcass will not absorb moisture which will prevent, as noted before, the proper curing of the new fabric plies and also the tread.

"After this operation the breaks, or ruptures, in the carcass of the tire are repaired by the use of new friction fabric and with the addition of additional plies of fabric—if any have been removed, as was noted before.

"In addition to the reinforcement, where necessary, on the outside, the tire is further reinforced by the use of two plies of fabric on the inside of the tire. This gives the tire a finish, which prevents the chafing of the inner tube, which would occur if this were not done. On this carcass, which has been properly repaired, where necessary, and cemented, is put the cushion stock, breaker and strip over the breaker. These units are put on in one operation and are carefully rolled down by the operator, after which it is ready for the tread.

"In the meantime, it having been determined as to the style of tread to be used, it has been buffed to remove the bloom, which is on the outside of most rubber goods and which is superfluous sulphur and other mineral ingredients in the rubber and which would prevent adhesion of the tread. If it were not removed. After the buffing operation it is carefully wiped off, as noted before, the tread is cemented with four coats of cement, but with the same operation as the carcass has been put through and after properly drying it is ready to be put on the tire proper. The operator takes a piece of clean muslin, puts it around the tire smoothly and without wrinkles, and over this muslin he places the tread band. This operation is rather a delicate one, as after the tread and the raw rubber are united it is practically impossible to remove them. The function of the muslin being to prevent this until the tread has been properly centered and aligned on the carcass of the tire. After this has been done the muslin is removed, the tread carefully rolled and smoothed down and any air blisters which may have formed are carefully removed and after the tire has been passed upon by the inspector, as to workmanship, it is passed to the next operation, which consists of applying the matrix.

"It is necessary to use a matrix, which is composed of talc, water and glycerine. The function of the glycerine being to retain the moisture during the curing process; the function of the matrix being to prevent a distortion of the tread configurations and also to give proper support for uniting the tread to the carcass.

"After the matrix has been properly applied the tire is wrapped carefully with wet cloths, spirally, after which the tire is ready for the curing operation proper, which consists of being placed in a specially designed apparatus which have all the devices which can be applied to produce the effect desired, among which may be noted the tires are revolved during the process of curing; the curing apparatus being supplied also with humidifiers, which give the right degree of moisture, which is necessary to properly cure the tires; and also a thermostatic arrangement for regulating the heat.

"The tires are cured at the present time, which operation, by the way, we hope to materially reduce, from two and

a half hours at 315 degrees to practically half of this time. Before the tire goes to the operator to be remade, and after it has been relined, it is mounted on a rim with a special air tube, which it is possible to inflate from 40 to 80 pounds pressure and which gives the necessary solidity to more firmly unite the tread with the carcass."

PANVAR MAKES OLD CARS LOOK JUST LIKE NEW.

When the finish of a car becomes dull or shoddy appearing, it does not always follow that the car should be completely repainted. A resurfacing coat of Panvar is probably all it needs. Car owners who have used Panvar have been completely satisfied. It is a refinisher that does its work in splendid style.

Panvar can be applied almost as quickly and as easily as a liquid polish, and it dries overnight. Panvar produces a similar effect to the gloss-finish varnish that the body builders use as a final coat to give the car its brilliant luster. It gives a durable, transparent and self-leveling, flow-on finish.

Being transparent, it can be applied to any color of body. It is weather proof, will not discolor from heat or steam, will not crack, craze or peel and resists heat, acid and rust.

Panvar is also used for water-proofing tops of all kinds, for preserving the finish or polish of metal parts, preventing rust, for redressing shoddy-appearing leather or imitation leather tops, etc. It is economical because of its speedy application, convenience of use and tremendous covering power.

A quart is sufficient for a fair-sized car. The price is \$1.50 for a quart and \$5.50 for four quarts, with an additional charge of 25 cents a quart west of the Rockies. Those who would like to try Panvar should write to the Panvar Co., Bulletin building, Philadelphia.

The company also prepares Fix-A-Mar colors for "touching up" marred surfaces. Fix-A-Mar is put up in large tubes for quick, economical and convenient use, especially where only a small amount is needed at a time. As making repairs or matching colors on damaged surfaces is generally difficult, these handy tubes help greatly to make such repairs. Fix-A-Mar comes in these colors: Primrose, Italian Sienna, battleship gray, French auto gray, express red, mudia red, chrome medium, coach green light, express green, coach blue dark, brewster green and maroon. With the 12 colors and also black and white, many shades can be made. A color card will be sent by the company on receipt of a stamp.

UNITED MOTORS OPENS NEW BRANCH IN TORONTO.

United Motors Service, Inc., which is the authorized service department of Delco, Klaxon and Remy, with general offices in Detroit, has opened a branch in Toronto at 88 Adelaide street west. The branch is equipped to render expert service on all motor car electrical equipment.

Prepare Questionnaire For Operators of Motor Vehicles in New York State

THE questionnaire to be answered by all motor vehicle operators, other than chauffeurs, in New York City, has been agreed upon at a conference of Francis M. Hugo, secretary of New York state, with the New York City Traffic Court magistrates and the representatives of various traffic and motoring bodies. Mr. Hugo explained that the questionnaire is not intended to perform the functions of a "written examination." It is merely an extended form of application for a license to operate a motor vehicle for more than 10 days in each year in Greater New York. The questionnaire follows:

State of New York, Secretary of State's Office, Automobile Bureau.

Application for operator's license. Before filling out, read the attached instructions carefully:

I, the undersigned, hereby, apply to the Secretary of State for a license to operate motor vehicles as an operator, and for that purpose answer the following questions:

1. Residence? Street and number, or R. F. D., postoffice, county, state.
2. Business address? Street and number, R. F. D., postoffice, county, state.
3. Residence preceding three years? First year. Second year. Third year.
4. Business, trade or profession?
5. How long have you been engaged therein, and, if employed, the name and address of your last employer? Name, address; from date to date.
6. Age, color, sex, weight, height, color eyes, color hair?
7. Have you ever used or gone by any other name than that given by you, or by any alias?
8. Are you a citizen? (a) If not a citizen state nationality.
(If naturalized, state when and where and native of what country. Date, place, nationality.)
9. Can you read English? Can you speak English? Can you write English?
10. Approximately how long and how many miles have you operated motor vehicles? (a) Have you ever operated a car in a large city? If so, how long?
11. Types of motor vehicle operated? (touring car, runabout, truck.) Motive power? (gasoline, electric, steam.) Transmission? (selective, progressive, planetary.)
12. Are you familiar with such parts of motor vehicles as are necessary to secure their safe operation? State the nature of your experience and any special qualifications or training you may have had.
13. Have you ever been licensed before as an operator or a chauffeur? If so, state as follows:—(a) Number of times? (b) By what state or locality? (c) For what years? (d) Whether as chauffeur or operator? (e) Number of last license?

14. Have you read the Motor Vehicle law of the State of New York? (a) Are you familiar with the State Highway Traffic law? (b) Are you familiar with the New York city traffic ordinances and the New York city police traffic regulations?

15. Have you ever had any accidents while operating a motor vehicle, and if so, state particulars. Number of times? place and injuries resulting?

16. Have you ever been convicted of a crime? If so, state the circumstances. (a) Have you ever been convicted of violating an ordinance relating to traffic? If so, state particulars. Number of times?



Nature of offenses? In what courts convicted? Date of conviction? Penalty imposed?

17. Have you ever had any motor vehicle license or certificate revoked or suspended in this state or elsewhere? (If so, give particulars.)

18. Have you ever been refused a license to operate a motor vehicle as operator or chauffeur? (If so, give particulars.)

19. Is your eyesight or hearing impaired in any way? (a) If your eyesight is impaired state whether or not you wear glasses.

20. Have you any organic affection of the heart, suffered an attack of epilepsy, stroke of paralysis, vertigo, or are you subject to fainting spells? (If so, give particulars.)

21. Are you crippled in any manner? (Give particulars.)

22. Have you ever been confined in any asylum or institution for the insane or for other mental affections? (a) Do you suffer from or are you undergoing treatment for any marked nervous affection?

23. Are you addicted to the use of intoxicating liquors, drugs or other narcotics in any form or manner? (a) Have you used liquors within the last year?

24. Have you ever been convicted of (1) public intoxication or other offense while intoxicated within one year, or (2) of the illegal use or possession of narcotics? (If so, state particulars.)

State where you desire your examination and road test.

(See list of places in instructions attached.)

State of New York, } ss:—

County of —,

On this day of before me

personally came, to me known and known to me to be the person described in and who executed the foregoing application, who, being by me duly sworn, did depose and say that he (she) knew the contents thereof, and that the statements and answers contained therein are true to the best of the applicant's knowledge, information and belief, and that the signature attached thereto is his (her) usual signature.

.....
(Notary Public, Commissioner of Deeds.)

CERTIFICATE OF CHARACTER.

1. I (being more than 25 years of age) have been a resident of..... for years, residing at No.

2. My business or occupation is and my place of business is No.

3. I have known the applicant for years.

4. I have read the application herein and from my acquaintance with the applicant I believe the statements made herein are worthy of belief.

5. That the applicant has not to my knowledge or belief any physical or mental weakness or infirmity or any habits which would in any way interfere with the proper management and control by him (her) of motor vehicles.

.....
(Name in full.)

WARNING.

Any person making a false statement in the verified application for registration, or in an application for a license, or any proof or statement in writing in connection therewith, or who shall deceive or substitute, or cause another to deceive or substitute in connection with any examination hereunder, shall be guilty of a misdemeanor, punishable by a fine of \$500, imprisonment for one year, or both.

The only fee you are requested to pay is for the original application. Any money paid to any person to influence the granting of a license to you is wasted. Any person attempting to bribe, or any person bribing, directly or indirectly, any person connected with the office of the secretary of state, will be prosecuted to the fullest extent of the law.

REFLEX IGNITION CO. MOVES INTO ITS NEW HOME.

The Reflex Ignition Co., maker of Reflex spark plugs, has moved into its recently completed plant on West 106th street, Cleveland, O. The new quarters are spacious and modern, and were made necessary by the rapidly growing demand for Reflex plugs. Provision has been made for further expansion. A spur on the N. Y. C. line means easy shipping. Straight line factory production has been worked out to the most minute detail.

PRICES JUMP AS CAR SHORTAGE CONTINUES

NEW models of automobiles coming on the market fail to embody any radical changes. Improvements in detail have been added that make the cars better than their predecessors, just as the cars of 1919 were improvements of the cars of 1918, but those who expected that the extensive use of motor vehicles in the war would bring about radical changes will be disappointed, if they examine the specifications that so far have been announced.

Prices, it is believed in the industry, must inevitably go down, but not right away. Although the industry is getting back into full swing and big production, the materials and labor situation are such that prices instead of turning downward have taken a distinctly upward swing. This condition, it is believed, will continue throughout the year, because the market for cars cannot possibly be satisfied in the next six months. What will happen next spring is entirely a matter of speculation.

Distributors throughout the country estimate that there is a demand for not less than 500,000 closed cars for delivery to consumers not later than Jan. 1. The closed car builders report that they cannot build more than 230,000 in time for the car makers to mount them and make delivery to their distributors by January.

As a result of this condition the price of closed cars is increasing. Very few dealers are even now able to give customers any promise of delivery on the stock models, and special closed bodies of all types are already beyond the reach of the average buyer.

If materials can be obtained at reasonable prices and the labor market becomes settled, the competitive state of the motor vehicle industry will surely cause a scaling down of prices by spring. But close observers of conditions are inclined to believe that another year at least must elapse before the great deficit in the supply of motor vehicles is overcome, and that not until then will there be much revision downward.

War Great Educator.

While the war did not cause any discoveries of tremendous moment that will revolutionize the methods of construction that have been followed in recent years in producing cars for the general public, it was a great educator. Such a test that was given the cars and trucks that took part in the long struggle on the various fronts revealed opportunities for improvement in almost every part of the structure of the vehicle, in frame, wheels, spring, motor, transmission, final drive, axles, bodies and control. It is this information that is being applied to the new models.

There is no widespread leap to the multi-cylinder field, as some expected would result from the development of the airplane motor. The companies that have been producing multi-cylinder cars will continue to build them and there will be about the same relative number of eights and twelves on the market as

there are at present. Some of the new concerns that are preparing to enter the business in the 1920 season will undoubtedly produce multi-cylinder cars, as the smoothness of operation of this type of power plant has a strong appeal to the motorist.

Indications, however, are that the trend that was apparent in this year's product will be continued. That is distinctly toward the improvement of the six and four with the aim of giving them the flexibility of control that is the great appeal of the eight and twelve. The employment of double sets of valves is a means to this end that is being ex-

Tire Makers Decide Not To Cut Prices

It is understood that the big tire companies have abandoned the plan of making a further reduction in tire prices this midsummer. Late in April when the 15 per cent. May cut was definitely agreed upon, it was tentatively decided to make another cut in August in order to keep the industry on a healthy basis with respect to margin of profit and give the consumer the benefit of lower rubber prices.

Of late, however, the cost of cotton fabric has advanced to such an extent as to preclude a big reduction in the price of finished tires. Consequently the big Akron companies will maintain the standard price policy.

tended and improved carburetion is another step in the same direction.

New manufacturers are entering the field, for the most part with the idea of going after the vast market for low and medium priced cars. Another six months, when the shows are in progress, the public may see a large number of cars of this type, mostly of the four and six-cylinder types.

However, producers of the expensive, luxurious cars have yet seen nothing to induce them to change their policy of building the best that can be built, and they feel certain that their market will increase rather than diminish. Even in the face of rising costs they have not changed their policy. New models of these cars are refined to the last detail in every part of their mechanism and body work, but they introduce no departure from former practices in the essential features.

There continues a constant demand from the sales departments for novelties in bodies, and it is practically certain that they will be forthcoming. Straight lines gave way to curves and curves to straight lines again, and with each succeeding change the grace of the bodies advanced. It is probable that the turn for the curves will soon come again; indeed, a trend in that direction is evi-

dent in some of the newest models of enclosed cars that have been produced for the fall trade.

Advances in Prices.

Touring car price advances ranged from \$50 to more than \$1000. Locomobile has announced a greater price jump than any, advancing \$1100 on open cars and \$1400 on closed models, with still greater increase on special body jobs, necessary, as explained by the company, to maintain and develop production up to customary standard under present costs. The new schedule of Locomobile prices brings the touring car from \$7000 to \$8100, the special four-passenger touring from \$7100 to \$8200, the limousine and landaulet from \$8200 to \$9600, the chassis alone jumping from \$6000 to \$7100, and with custom bodies coming as high as \$11,000. The company will continue its policy of limited production.

Chalmers prices are \$120 ahead on five-passenger models and \$150 on seven-passenger, all effective at once.

The Maxwell touring car has been raised \$90 to \$985.

Cadillac is up on six out of 13 of its models, open touring models remaining the same and will probably continue so, but closed cars are increased from \$100 to \$300.

Studebaker has gone up \$100 on touring and open models and \$150 on closed cars, and Hudson inaugurated an advance of \$125 on all models, with a \$200 rise in the Essex phaeton, from \$1395 to \$1595, the five-passenger sedan remaining \$2250.

The price of the Oldsmobile eight has been increased from \$1795 to \$1895. Although the price of other models remains unchanged, every indication points to extension of the increase in the immediate future.

The Chevrolet Motor Co., it is rumored, will inaugurate a new and higher price schedule on all models in August.

The Paige-Detroit Motor Car Co. will bring out its new series very shortly and it is altogether probable that the price will go up within 30 days. The Hupp Motor Car Corporation prices have been guaranteed until Aug. 1.

Buick has advanced \$100 on closed cars, the touring model remaining as in the spring, but deliveries are far behind orders and the company does not expect to be able to produce more than half the closed cars demanded by its dealers.

Pierce-Arrow prices have been up since June 24. The five-passenger touring is \$7650; seven-passenger touring, \$7750; closed cars range from \$9050 to \$9450.

Mitchell cars in the improved model, "E-40," were raised \$100 July 1, the new price being \$1575. The new Liberty closed models, a four-passenger coupe and a five-passenger car, are offered at lowered prices, the former at \$2370 and the latter at \$2470.

Champion Spark Plug Co. plans output of 35,000,000 plugs in 1919, an increase of 10,000,000 over 1918, and representing 65 per cent. of the country's output.

UNITED MOTORS TAKES ON JAXON RIMS SERVICE.

United Motors Service, Inc., with its 15 branches and 38 distributing stations throughout the country, has added the service of rims and rim parts of the Jaxon Steel Products Co., Jackson, Mich., to its accounts. The company plans to take over other new accounts which it will undertake to departmentalize so that specialization along various parts of the car may be accomplished by the organization. Arrangements for handling the Jaxon rim service were made when the Bearings Service Co., Detroit, decided to concentrate its entire energies upon bearings service exclusively. A. D. Trempe, who has had general supervision of the rims service of the Bearings company, will supervise the rims service of the United.

HART-PARR MEN TO DISTRIBUTE IN TEXAS TERRITORY.

A. H. Grover and Byron Snyder have opened a distributing house at Dallas, Tex. They were formerly connected with the Northern Hart-Parr Co., Minneapolis. Recently they sold their interest to Mr. Warner, the third partner, and contracted for southern Oklahoma and the State of Texas, excepting the panhandle and the extreme southwest. Mr. Grover was directing the sales at the Northern Hart-Parr Co. and Mr. Snyder the office. The Texas Hart-Parr Co., as the new firm has been named, has leased a good location at Main and Houston streets, in the machinery section of Dallas, and already has tractors on the ground. As there are many old Hart-Parr 60's in Texas, the new firm will not find the name Hart-Parr unknown.

UNLIMITED GUARANTEE ON ALL GOODYEAR TIRES.

The Goodyear Tire and Rubber Co., Akron, O., has announced an unlimited guarantee on all tires made by the company, whether pneumatic, solid or cushion. All tires are guaranteed to be perfect during their entire life, without limitation as to mileage or length of service.

MALDEN, MASS., POLICE HAVE TRAPS FOR MOTORISTS.

The police of Malden, Mass., have been enforcing these traps: On Highland avenue, Pleasant street, Mountain avenue, Main street and Eastern avenue. Traps are placed for those not sounding horns. In Malden square motorists should not pass trolley cars that are not in motion.

GENERAL MOTORS.

General Motors officials emphatically deny reports that the company may take over Pierce-Arrow and Stutz. General Motors will not spend money for acquisition of additional automobile plants. It will make huge outlays for additions and improvements to its present holdings in order greatly to increase production.

WRIGLEY ENTERS AUTOMOBILE FIELD.

Wm. Wrigley, Jr., the chewing gum king, has extended his activities from chicle and baseball to the automobile industry. He has just been elected a director in the Auburn Automotive Co., after having purchased a large block of stock in the enlarged Indiana corporation. After 19 years of manufacturing, the Auburn Automobile Co., with an unprecedented business on its books for the year, decided to practically treble its output, with the result that the official personnel has been considerably strengthened through the addition of men well known in business and finance.

Maurice Eckhart, president and general manager, who has been with the company since its inception, continues in the same capacity, as does J. I. Farley, second vice president and general sales manager. The new men who become directors of the Auburn Automobile Co. along with Wm. Wrigley, Jr., are A. P. Kemp, formerly vice president of the H. H. Franklin Manufacturing Co., who becomes first vice president and treasurer of the Auburn Automobile Co.; H. H. Hitchcock, formerly vice president of the First National Bank, Chicago; Ralph A. Baird of F. B. Hitchcock & Co., and Judge James H. Rose of Ft. Wayne, Ind.

FULLER & SONS MFG. CO. OPENS NEW YORK OFFICE.

The Fuller & Sons Manufacturing Co., Kalamazoo, Mich., announces the opening of a New York office at 22 American Circle building, 1834 Broadway, with F. George Walker in charge. This company is making a complete line of motor car, motor truck and tractor transmissions.

"GETTYSBURG FOR THE MOTORIST."

It is said that the number of automobile tourists who visit the Gettysburg battlefield each year now exceeds the number engaged on both sides there on July 1, 2 and 3, 1863. Road travelers have the best means of observing the topographic features of the surrounding country, as well as the battle area itself, but in order to make the trip thoroughly interesting and enjoyable the reference data should be written from the special viewpoint of the tourist and made available in convenient, inexpensive form. This has been done in a 32-page brochure, which includes a map of Gettysburg, showing the principal streets and avenues leading in and out; a special map of the battlefield and a number of fine illustrations.

"Gettysburg for the Motorist," price 50 cents, has been prepared by and may be ordered from Robert Bruce, Clinton, Oneida Co., New York.

ROOT & VAN DERVOORT HAS BIG CAPITAL INCREASE.

Capital stock of the Root & Van Dervoort Engineering Co., East Moline, Ill., maker of the R. & V. stationary engine, Moline-Knight automobile and R. & V. automobile and tractor engines, has been increased to \$7,500,000 from \$1,346,200. The issues will be divided into \$2,500,000 common stock and \$5,000,000 eight per cent. preferred stock.

This increase will in no way affect the control of the business, and the personnel and management will remain the same. The board of directors is increased from seven to nine. Large capital was provided to enable the company to increase its manufacturing facilities and greatly increase production. Important expansion of the automobile department will result almost immediately. New models of cars are being developed and a new model of the Moline-Knight motor will be put out soon. The output of automobile and tractor motors and engines will be greatly increased.

STORM MANUFACTURING CO. GOES TO LARGER QUARTERS.

The Storm Manufacturing Co., Thompson, Ia., announces that on and after Aug. 1 its main office and factory will be located at Fourth street and Sixth avenue, S., Minneapolis, Minn., and that its Thompson, Ia., shops will be continued for manufacturing purposes only.

The company's rapidly increasing business demanded considerable more floor space and better shipping facilities, both of which are accomplished by this change. The new home is a strictly modern structure, well lighted and affording ample room for present needs, as well as provision for expansion.

The location is not entirely new to the company, as its Minneapolis branch factory has occupied the first floor space in the building for the last two years, and the present change is in accordance with the original plans.

The company makes the well known line of Storm cylinder reboring machines, both for hand and power operation; also connecting rod bearing reamers, jigs and straightening gauges, valve port renewing tools, main bearing babbitting and boring tools, piston vises and also special pistons for all makes of motors in different oversizes.



Storm Manufacturing Co.'s New Building.

BIG DEMAND FOR METZ MASTER SIX CARS

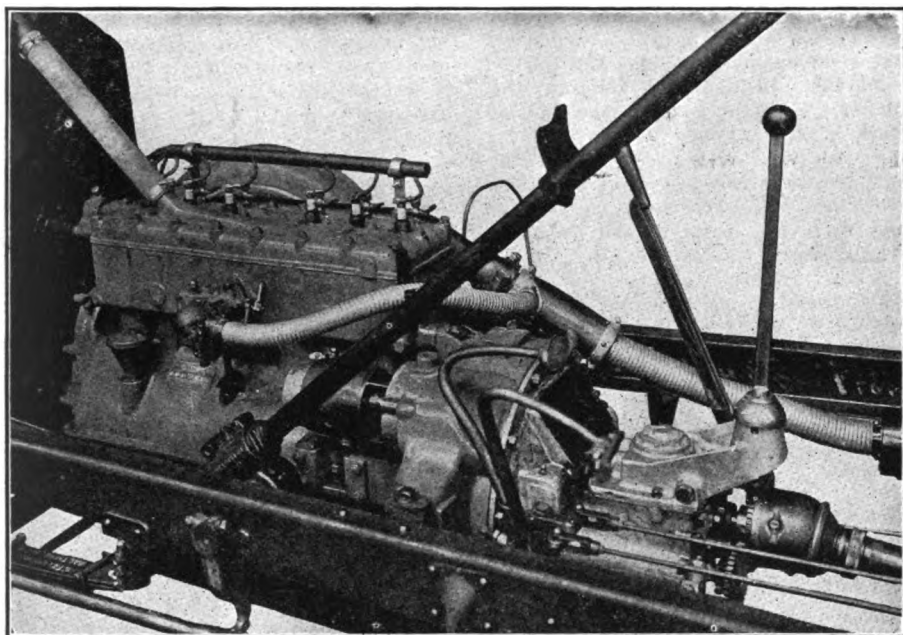
Speed Up Production to Keep Pace with Orders

BECAUSE of the constantly increasing demand for the Metz Master Six cars, the Metz Co., Waltham, Mass., will devote its entire plant to car building. This plant covers eight acres, and 2600 persons were employed there in war work.

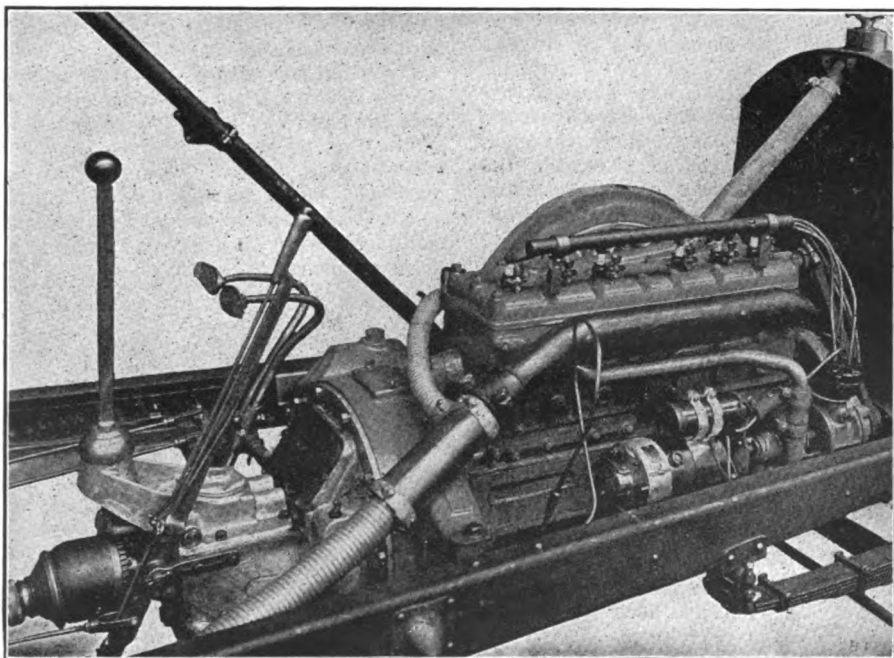
The Metz Sales Corporation, Metz building, 920 Boylston street, Boston, is the selling representative for the Metz Co. R. A. Pickens, who has been connected with the Metz interests for a

number of years, is treasurer and general manager of the corporation. He has developed a strong sales organization in the East and he plans to increase this until the corporation is represented in practically every commercial center of the country. Satisfactory export connections have already been made.

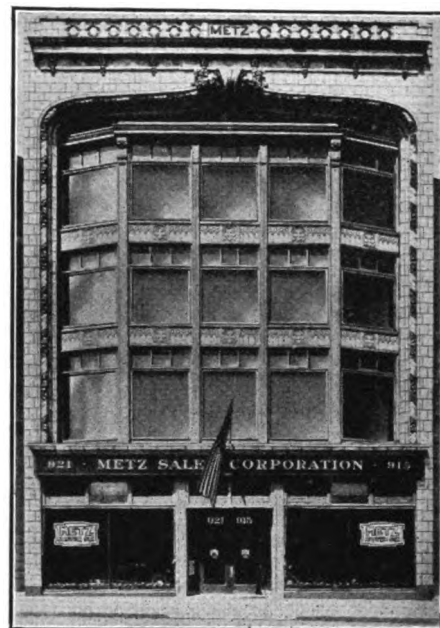
The Metz Co. is now well advanced in production, although thus far it has been impossible to keep pace with the demand. The new Metz Master Six was de-



Left or Intake Side of the Metz Master Six Engine with the Carburetor and Westinghouse Starting Motor and Control Members Shown.



Right or Valve Side of the Metz Master Six Engine, Showing the Water Pump, Westinghouse Generator and Distributor.



Metz Building, 920 Boylston Street, Boston, Location of Executive Office of the Metz Sales Corporation.

signed by C. H. Metz, founder of the Metz Co. Mr. Metz has been prominently identified with the automotive industry for a quarter of a century. In the Master Six he has created a car that has won instant favor.

High Quality Units.

Every unit incorporated in the Metz is a product of a specializing concern that is recognized for high quality. The company points with pride to the fact that the machine in every detail represents the experience of not only the best specialists, but of one who has combined in one design all that is good of all other designs and obviated every factor that mature knowledge had shown might be criticised or would detract from the extremely high standard of engineering that had been sought.

The main units include a Rutenber six-cylinder engine, a Borg & Beck dry disc clutch, a Brown-Lipe transmission gearset, a Timken front axle, Perfection springs, a specially built radiator, a Stromberg carburetor, a Westinghouse two-unit lighting and starting system, a Connecticut distributor, with all auxiliaries of equal quality.

The chassis are fitted with a five-passenger touring body, a three-passenger roadster body, a four-passenger coupe body, a sedan body or a speedster, which is equipped with disc steel wheels, and two extra wheels that are carried on a running board. The prices for these cars are: Touring, \$1695; roadster, \$1695; coupe, \$2495; sedan, \$2595; speedster, \$2795.

Pride in Custom Work.

The touring car is equipped with a one-man top with curtains and top boot, the curtains being carried in a pocket in the top, and the material is Dreadnaught top fabric. The equipment for the touring model includes a rain vision ventilating

windshield, a speedometer, a motor driven horn, headlights with auxiliary lamps; dash, rear compartment and tail lamps; an ammeter, an oil pressure indicator, front and rear bumpers, an extra wire wheel mounted at the rear with special carrier and safety lock, a special robe rail, a pump, a jack, a tool kit in a special pocket, a tire repair outfit, an ignition lock and special brackets for license plates.

All of the bodies are built by the Metz Co., which takes great pride in its custom work. The bodies are built to streamline effect and are finished in royal blue as a standard color, with black enameled fenders and trimmings. The upholstery is straight piped fitted leather seat and back cushions for the open bodies, the closed bodies being upholstered with fabric or leather as may be ordered, with fabric the standard. The front footboard and the running boards are covered with linoleum, and the floor of the rear compartment is carpeted.

The source of the ignition current is a Willard storage battery, six volts, 120 ampere hours capacity, which is charged by the generator of the Westinghouse two-unit starting and lighting system. This current is directed to the cylinders by a Connecticut distributor and there is a uniformly effective spark generated at all times in each cylinder, so that there is positive engine efficiency.

The Power Transmission System.

The clutch is a Borg & Beck 10-inch dry disc type that is self-adjusting and requires practically no lubrication, and is completely enclosed in the housing. It is claimed to be extremely easy to engage and to be positive in action. This is combined with a Brown-Lipe transmission gearset, a sliding gear selective type having three forward speed ratios and reverse. The shafts and gears are very large and have unusual endurance. The shafts are a special alloy steel and the gears are nickel steel, and the shafts are carried on annular ball bearings. The gearset is enclosed in an aluminum case. The gear shifting lever is mounted in an offset bracket at the rear of the case and this is a ball and socket type.

The power is transmitted from the engine to the rear axle by a long, tubular shaft with a universal joint at either end, the joints being fully housed and packed with grease. The rear axle is a Timken three-quarters floating construction, and is driven by a helical bevel pinion, and master gear. The axle housing is pressed steel and there is a large rear cover plate on the central section at the rear. By removing this plate the differential gearset is easily accessible. The differential gearset and the pinion shaft are assembled on the forward plate of the central section of the axle housing. The wheels are driven by shafts that are seated in the bores of the differential gears, the outer ends of which are bolted to the hubs. The housing is webbed to obtain strength. The driving shafts may be taken out without removing the wheels and adjustments may be made to all the bearings, which are the Timken roller type.

Live-Wire Officials in Metz Organization



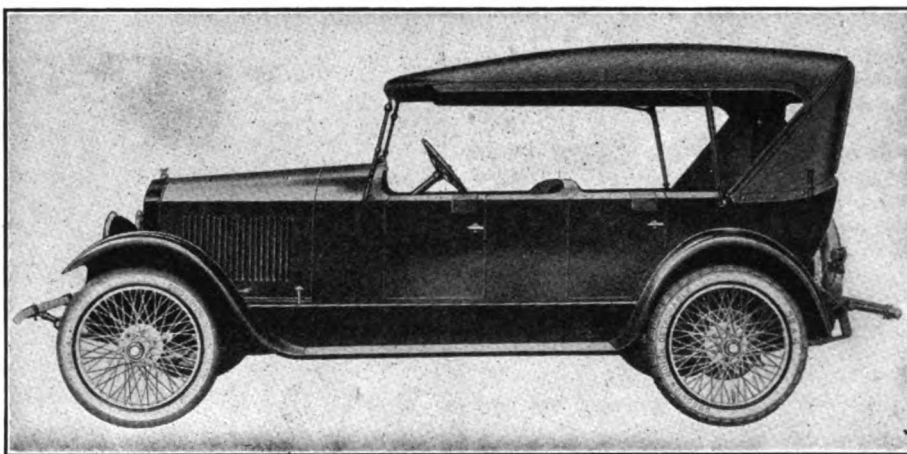
C. H. Metz, Designer of the New Metz Master Six Series of Car.



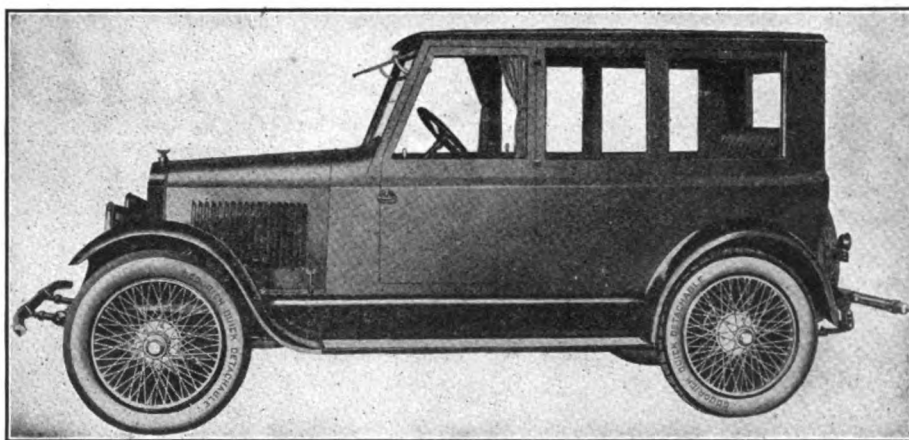
R. A. Plekens, Executive of the Metz Sales Corporation, Metz Car Distributor.

All of the other mechanical features are in accordance with the best automotive engineering standards, and, com-

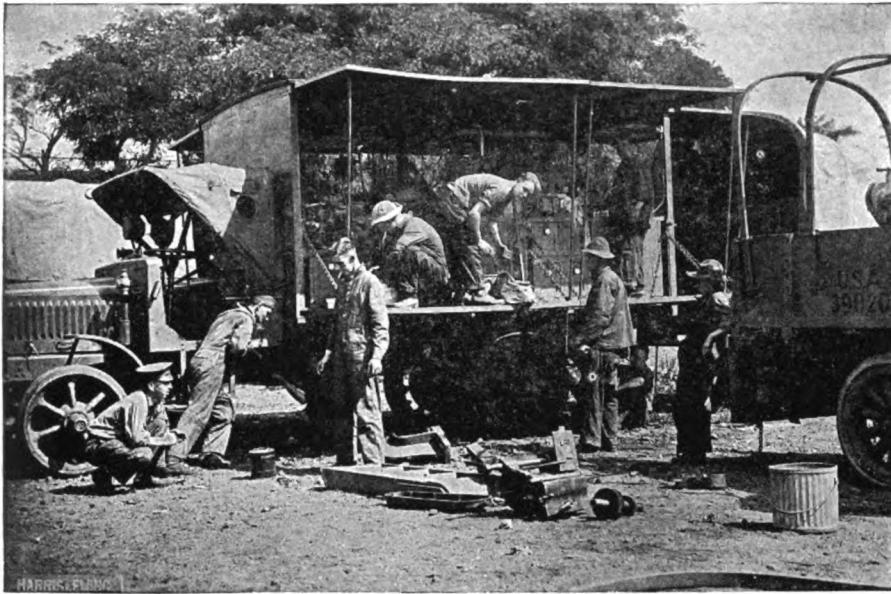
bined, they go to make up a car that is bound to give satisfaction and make the owner proud of his choice of the Metz.



Metz Master Six Chassis with Five-Passenger Touring Car Body and Complete Standard Equipment.



Metz Master Six Chassis with a Sedan Body Seating Five Passengers and Complete Standard Equipment.



Fitting Army Train For Trip Across Continent

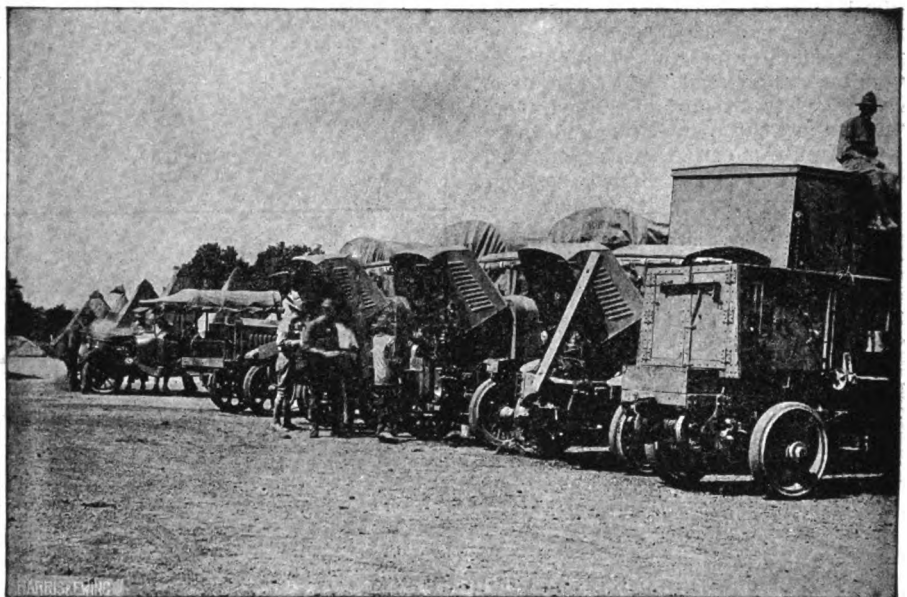
The preparations for the transcontinental march that is now being made by two companies of the Motor Transport Corps and several detachments of the United States Army, which was begun July 7 and will end about Sept. 1 at the Presidio, Cal., was an undertaking on which depended the success of the demonstration from a mechanical point of view.

No one questioned the possibility of the vehicles being driven the distance, but as the march was to be made to schedule and retardation from failure of the vehicles from any cause that could be anticipated would establish insufficient preparedness, a great deal of care was taken to be sure that all of the machines were in prime condition.

The system the vogue with the army service does not accept excuses and or-

ders are followed literally to the letter. Every provision that could be made to insure the convoy being self-sustaining was given attention. Probably no one thing was more important than inspection and lubrication of the cars and trucks, and this was carried out systematically. Every adjustment was made to a standard and every truck and car was thoroughly oiled and greased, so there would be no possibility of lack of lubricant.

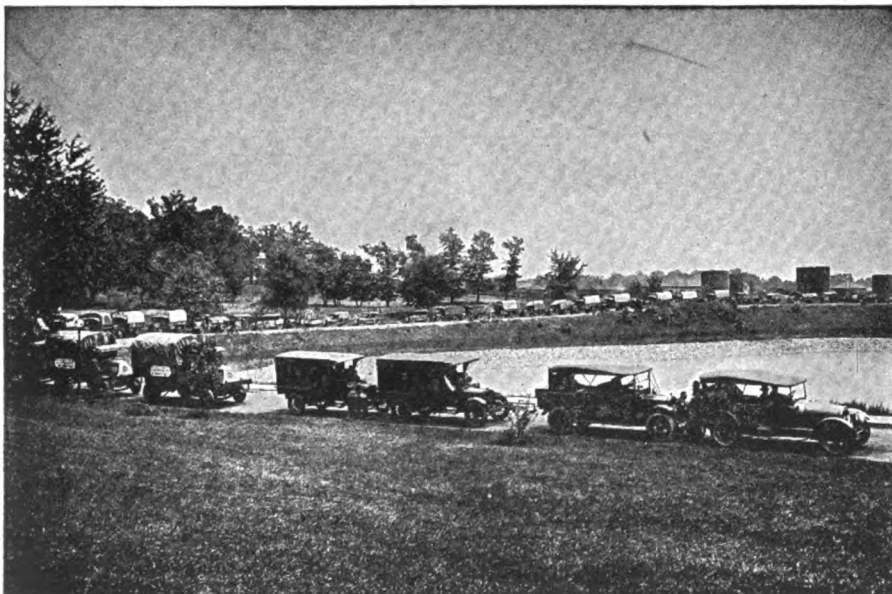
The train includes a repair shop equipped with the same machinery that was used in the field repair shops in foreign service and a sufficient stock of parts of each type and make of truck was provided so that in the event of breakage or excessive wear replacement can be made with the least practical delay. The field repair shop is equipped with several all-purpose machine tools, driven by the engine, and every hand tool that experience would dictate was necessary. The companies include a number of expert mechanics who are qualified to work on any of the trucks and cars.



The supplies carried included materials from which temporary repairs could be made, and the possibilities of uses of these in necessary work was one of the details under observation. The preparations were continued over a number of days and with military discipline were carried out in every detail. After the train was in readiness for the march the different units were finally inspected at Meigs Field and each was found to be mechanically fit.

Different lubricants were used with a view of making comparison of results obtained with each make, and the differentials and transmission gearsets of a group of the machines were filled with Dixon's greases.

The accompanying illustrations were made by Harris & Ewing, Washington, D. C., the upper showing a field machine shop being stocked for the march, the center showing the final inspection at Meigs Field, and the lower the convoy after the start, leaving the capital for the Golden Gate.



THE MAKING OF A SPARK PLUG

Highly Developed Engineering and Scientific Methods of Production Insure Exceptional Efficiency from Red Head Products.

PRIMARILY automobile vehicle propulsion depends upon two factors, the quality of the fuel and the manner of burning it. This statement may be applied to all internal explosion engines. The fuel is supplied through the carburetor and it is burned by igniting it with an electric spark generated in each engine cylinder.

perfected instruments that can be adjusted with reference to each other so that an experienced driver will be reasonably certain of obtaining dependable engine operation.

Engine Functioning Depends on Plugs.

But rarely does any motorist realize that the functioning of both the carburetor and the

approximations of loss with reference to diffusion of heat—and the internal explosion engine is essentially a heat engine, which are shown in an accompanying tabulation.

Accepting these figures there is a total loss of 87.5 per cent. of the energy value of the fuel in delivering power at the rear wheels, and of the 12.5 per cent. that is delivered 7.1 per cent. is necessary to compensate for air resistance. This leaves 5.4 power available for crossing surfaces where the traction is poor or heavy and for climbing hills.

Obviously there is vital need of obtaining the largest practical degree of combustion in the cylinders of the engine, and this is not obtainable unless the spark plugs are perfectly set so that the ignition will take place at the time when the expansive force will most effectively develop power. Each spark plug creates a spark in a cylinder when the electric circuit is made and the current "jumps" or arcs at the points of the electrodes. The electrical energy originates in the magneto or battery and it is distributed to the different cylinders at the times when the pistons are at a certain position in them, the position depending upon a number of factors, including engine speed, the type of ignition system, the fuel and the temperature and volume of moisture in the air.

Combustion of fuel in the engine cylinders will take place with almost inconceivable rapidity. High speed engines have been driven to nearly 4000 revolutions a minute. Single-cylinder engines have been built in France that have maximum speed in excess of 3600 revolutions, which means more than 1800 separate piston impulses a minute or 30 a



Putting the Electrodes into the Insulating Cores and Filling the Bores with a Vitrifying Cement at 50 Pounds Air Pressure.

This statement may appear so elemental as to cause the reader to wonder why it has been made, but the object is to emphasize that acceptance of a fact does not mean that it is understood. For instance, the driver of an automobile may know nothing of automotive mechanics; he may have some theoretical knowledge or some practical experience with which he determines engine or vehicle operation with reference to his standard, but he may be incapable of making a trifling adjustment accurately.

Power Losses by Heat and Friction.

The carburetor and the magneto, timer or distributor are generally believed to be the sources or origin of the combustible gas and the electric spark that ignites it, and that upon them the efficiency of the engine and the vehicle depends. Both are carefully designed and

Cooling water.....	35.8
Exhaust gas, direct radiation..	35.6
Exhaust pipes.....	1.0
Muffler	1.2
Total.....	73.6

The losses by friction are as follows:

Engine friction.....	5.6
Transmission friction.....	2.9
Total.....	8.5

Losses in wheels and tires:

Rear tires.....	3.7
Front tires.....	1.1
Front wheels.....	0.6
Total.....	5.4
Total.....	87.5

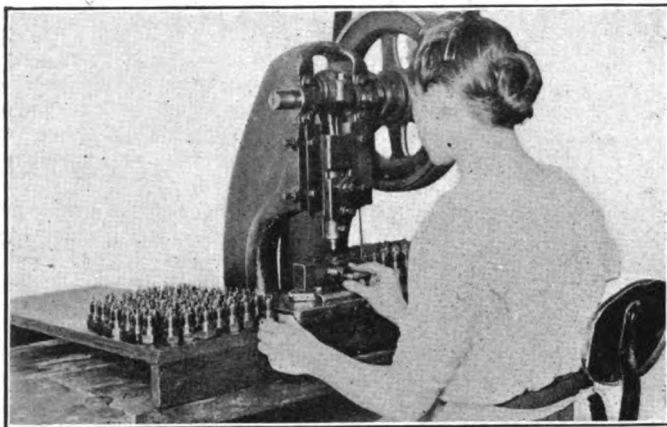
its relation to engine efficiency is ignored or disregarded.

Were spark plugs better understood there would be far greater fuel and lubricant economy, engines and vehicles would afford much more satisfaction, and there would be a surprising saving in bills that are incurred for "adjustments" that are absolutely unnecessary.

With reference to fuel consumption. Taking an engine that is "normal" on the testing stand, not one that has been more or less reduced in capacity because of neglect or ignorance, which applies to the engine found in the car or truck in ordinary daily use, a surprisingly small ratio of useful energy is produced when measured by the full value of the fuel. Without considering the possibilities of loss of energy other than those that are believed to be inherent in automotive practise, the best authorities are agreed upon these



The Electrodes and Insulators, After Drying, Are Placed in Ovens and Exposed to High Temperature to Bake the Cement That Retains the Electrodes in the Bores.



"Staking-In" the Fish Hook-Shaped Shell Electrodes Into the Spark Plug Shells—A Single Operation on a Specially Designed Power Press.

second, and there is probability that this number could be exceeded. This applies to a single cylinder, and as the number of cylinders is increased the number of impulses a minute for the engine increases in ratio.

This will be better determined by reference to the following tabulation:

No. Cyl.	Engine R.P.M.	Power Impulses a Minute	Ignition Sparks a Minute a Cylinder	Ignition Sparks a Minute an Engine	Ignition Sparks a Second a Cylinder	Ignition Sparks a Second an Engine
1	1000	500	500	500	8.33	8.33
2	1000	1000	500	1000	8.33	16.66
4	1000	2000	500	2000	8.33	33.33
6	1000	3000	500	3000	8.33	50.00
8	1000	4000	500	4000	8.33	66.66
12	1000	6000	500	6000	8.33	100.00

Combustion Heat Is Intense.

The heat generated in the cylinder at the instant of combustion is intense. The temperatures will vary from 3000 to perhaps 4000 degrees Fahrenheit, which intensity is illustrated by comparing the heat at which steel fuses, or about 2550 Fahrenheit. The mean temperature of the cylinder is much lower because it is reduced as the piston descends for the power stroke, is cooled somewhat by the exhaust stroke, and is cooled decidedly during the intake or suction stroke and to some degree while the cool fuel gas is being compressed.

While the engine is in motion these cycles are repeated. The tabulation shows that with engine speed of 1000 revolutions there will be an average of 500 power impulses for each cylinder, and an average of 8.33 ignition sparks created a second. This may appear to be comparatively slow, but from 1800 to 2400 revolutions a minute is not uncommon with standard automobile engines, and from 3000 to 3600 is sometimes reached with racing car engines. The maximum stated would be approximately 29 power impulses a second to a cylinder.

Great Rapidity of Combustion.

But the term power impulses does not represent the rapidity of the consumption of the fuel in the cylinder. Considering the period of combustion, if the engine is running 1000 revolutions a minute and each cylinder has 500 power impulses the time for each impulse revolution is slightly more than 1/6 second and if the spark is made 15 degrees advanced or before top center, and with

360 degrees for a revolution, the time for ignition would be 15/360, which allows 1/24 of the time for one revolution, or 1/144th of a second, for the gas to burn and create the expansive force within the cylinder. This is so brief a period that it is not possible to make comparison. Yet in that time the electric spark must create a flame that will spread through every part of the combustion head.

If the combustion chamber is irregular the flame will not be uniform in its progress in all directions from the electrodes of the spark plug, which is held to be the reason why L and T-head cylinder engines are either slower in action or develop less power than engines with valves in the heads of the

The insulation of the center electrode must be such a nature that it will not absorb oil and short circuits, will not crack under the extreme variations of heat and it should be so assembled that it may be cleaned readily.

General Spark Plug Construction.

The spark plug is usually constructed with a shell, so-called, which is either steel or brass or bronze, that is shaped at the upper section to seat a wrench. There may be other forms, but it ordinarily is hexagonal. The lower part of the outside of the shell is threaded to screw into the tapped bore in the cylinder head. Through the center of the shell is a bore, the lower part of which is smaller than the upper, and there is a shoulder surrounding the smaller bore on which is seated the insulation of the center electrode, which may be stone, porcelain, mica or other material that is not a conductor of electric current.

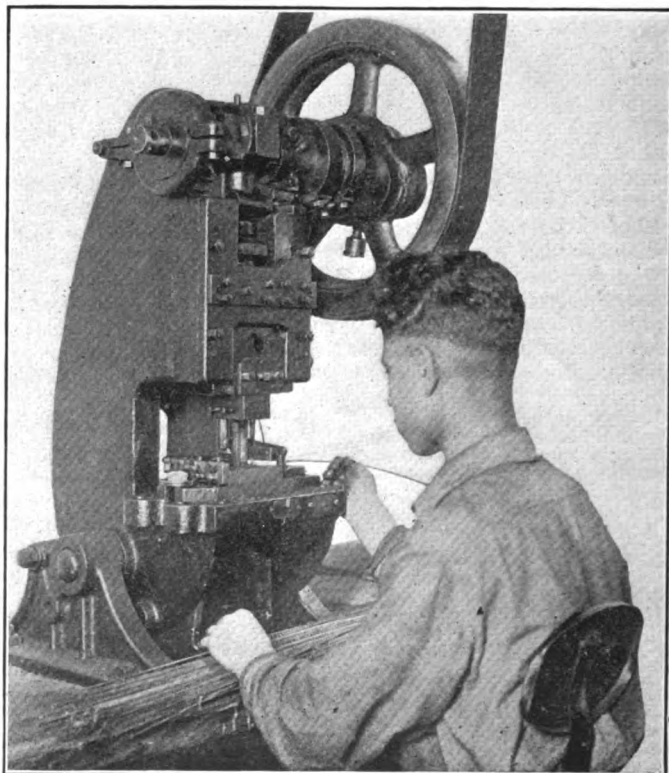
The bushing is either brass or steel and is a short section with a hexagonal collar that is a seat for a wrench, with the external length below it threaded to screw into the larger internal bore of the shell, and the bore of the bushing is such that it is a loose fit for the upper end of the insulation of the center electrode. The insulator of the center electrode is shaped to have a central collar at a point usually below the middle and at either side of this collar is placed a packing that seats against the shell and the bushing, so that when the bushing is screwed into the shell and seated there shall be no leakage past the gaskets of either air or gas.

The center electrode extends through the insulation, the upper end being threaded and the lower end either straight or shaped. On the upper end

cylinders.

What a Perfect Plug Will Do.

The functioning of the spark plug may be dependent upon numerous conditions. A perfect plug must be so constructed that it will deliver the full voltage developed by the magneto, the coil or the combination of the two at its electrodes. The electrodes must be so set that the spark created when the current "arcs" between them will have sufficient intensity to ignite the gas. It must be perfectly insulated. It must be so formed that oil will not accumulate on the shell and the insulation of the center electrode and, when baked or carbonized, will not cause a short circuit. It must not leak either at the bushing or the shell, for leakage will lessen compression and cause loss of power, carbonization and necessitate greater consumption of fuel.



Cutting the Center Electrodes from Nickel-Manganese Steel Wire, These Being in Two Types and Two Sizes of Stock, on a Special Press.



Assembling the Bushing, Shell, Insulator or Core Complete and the Gaskets After the Tests of the Different Parts to Insure Against Defects.

is generally placed a binding nut with a milled edge that is screwed tightly against the insulation. There is a small lock washer and a knurled nut that serves to retain the terminal of the cable or wire securely against the binding nut and the electrode. The shell electrode is a piece of round metal anchored into a bore or secured in a manner that will insure electric conductivity that can be adjusted with relation to the center electrode, so that the gap or space between them may be from 1/32 inch for battery current or from 1/50 to 1/64 inch for magneto current.

Many Types and Designs for Plugs.

What has been stated with reference to design and construction applies generally to any spark plug. There are, of course, many different types and the dimensions of the several members of the plugs will vary, and the materials will differ. There are special designs that are intended to meet the requirements of certain engines. As a rule manufacturers produce spark plugs to S. A. E. dimensions and special types and sizes which demand may justify.

The spark plug that will endure, that will have high electrical efficiency, will afford the greatest fuel economy, because it will cause the fullest consumption and produce the largest degree of power from a given volume. It will contribute to the satisfaction of the owner because with adequate power he will have ease

originate frequently and require expert examination to determine.

Exclusive Qualities of Red Head Plugs.

What is claimed to be a superior spark plug because of exclusive qualities of design and construction is produced by the Red Head Spark Plug Corporation, with offices at 261 Broadway, New York City, and factories in New York and at Newtown, Pa. This concern acquired the patent rights, material and general assets of the concern that formerly manufactured Red Head spark plugs.

In the production of this plug exceptional care is taken that it will measure up to mechanical and electrical standards, and the parts and the assembled plugs are subjected to inspections and tests that are regarded as being certain to detect defects of materials and faults of workmanship.

The corporation was organized to take over the business after very close examination had been made of the company's patents and the quality of the products that were practically productive under them had been established. The concern planned to largely increase the manufacturing facilities and better develop the processes of production, and to broaden and increase the scope of its sales department.

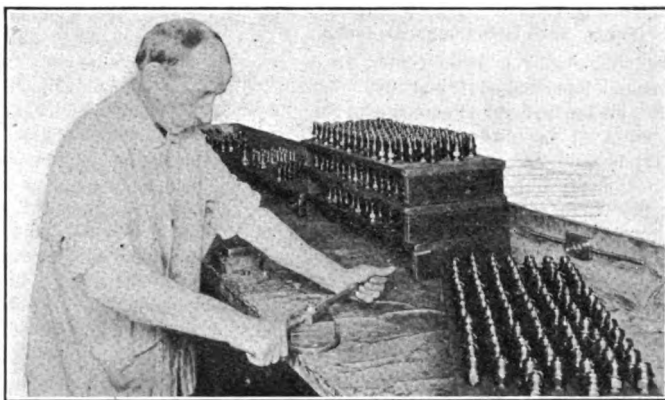
The company now operates two factories, that at New York City being given over to the production of plugs from materials manufactured in it, and the other at New-

town, Pa., where the insulation cores that carry the central electrodes are produced. The cores or insulators are made from a combination of clays imported from France, England and Belgium, and these materials are combined in proportions that have been found by innumerable experiments to have qualities that are claimed to be superior to any other type that is made. The insulators are maintained to be a synthetic stone that has a structure that differs entirely with that of porcelain and will endure the very wide changes of temperature and the vibratory stresses of the engine without fracture. The insulator material is known as Vitristone and the name is registered in the United States patent office.

Again, there is the insurance against defects of ignition that are regarded as inseparable from electric systems, which cause annoyance and inconvenience and discomfort. There is material reduction of expense for adjustments and repairs of the car that

Statement is made that this insulator is greatly superior to any other and that its endurance is far greater than any porcelain insulator made; that because of this endurance the life of these spark plugs is measured by years and a defective insulator is almost unknown because of the methods of manufacture and the care taken in testing and inspecting them.

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Seating the Gaskets Between the Core and the Shell and Bushing—This is Done by Hand to Obtain a Perfect Seat Without Stressing the Gaskets.

How Plug Insulators Are Made.

The process of producing these insulators is very interesting. The clays are mixed and in the slip house the mixture is passed between a series of magnets of such strength that all particles of iron are drawn from it, so that it is perfectly free of what might be conductors of electricity. The mixture of clays is then taken to the "throwing up house," where it is formed into what are known as "biscuits," which are pieces of the compound having cylindrical shape.

These "biscuits" are then given a rough turning in a machine that forms the collar or largest diameter and the two upper and lower diameters, and bores the hole through the center for the electrode. The pieces are then dried from 60 to 70 hours at room temperature, after which they are again turned in automatic machines that reduce the diameters to exact dimensions and finish the bores, and complete the "petticoat" or enlargement of the bore at the base of the insulator.

Kiln Firing a Long Process.

The pieces are again dried at room temperature for a considerable period



Inspecting the Plugs After Final Assembly and Test and Adjusting the Points of the Electrodes by Gauge to Be Certain of Positive Functioning.

and then are placed in "saggers," or carriers, and are put into the kiln. The kilns have capacity for about 40,000 insulators for each firing. When the insulators are put into the kiln from four to eight test pieces are placed in different openings and by the effect of the heat on the test pieces the progress of the firing is determined. The test pieces are in the form of cones and these will gradually assume shapes by which the firing is judged. The kilns are fired with a special coal and the temperature will reach 3800 degrees Fahrenheit. The firing must be carefully watched else the contents of the kiln may be destroyed and be reduced to what are known as "duds," or, if burned, to "nigger babies." From four to six days is required for a firing.

The insulators are removed from the kiln and after cooling are subject to the glazing process, the glazing material being sprayed on instead of dipping them into the compound. After the glazing the insulators are decorated, this being with red, and consists of the trade mark and a narrow band at the top. They are next placed in the decorating kiln and again fired, this setting the glaze and the decorations.

Tests for Electrical Defects.

Each insulator is then tested to detect possible electrical defects and carefully inspected to find cracks or porosity. The electric test is made with a temporary electrode and an extremely high voltage is used. Statement is made that no other manufacturer makes so thorough a test of insulators, most of them testing a few of each lot as it is going through the plants.

The insulator plant at Newtown is maintained to be the most complete and the best equipped of the kind in the country, and that it was constructed with the view of producing insulators for the Red Head Spark Plug Corporation, alone evidences the care taken to obtain quality. This plant is large enough to produce all insulators that can be utilized by the New York factory for a considerable period, and its capacity can be increased when necessary to meet any requirement.

At the factory in New York the insulators are again tested for breaks and porosity upon receipt, each being examined before work is done upon it. This is exclusive of test made of the spark plugs as they are later on assembled. The center electrodes are made of nickel manganese steel wire that is made to specification and is in two sizes, .075-inch for the standard sizes and types of plugs and .125-inch for the "Big Boy" plugs, the latter being designed for specially high powered engines.

Making the Central Electrodes.

The wire is cut into lengths and is threaded at one end for the standard sizes, but the wire for the "Big Boy" plugs is not threaded. Instead, at one end a short piece of steel wire of larger diameter is electrically welded, this shorter section being threaded. Where the two pieces are joined a collar or flange is formed that serves to anchor the electrode in the bore of the insula-

tor and also seats at a point in the bore that locates it with reference to exact projection beyond the ends.

The electrodes are placed in the insulators and they loosely fit the bores. The space between the electrodes and the internal bores of the insulators is filled with a thick paste formed principally of pulverized flint and silicon soda. The paste is forced into the bores under a pressure of 50 pounds, the locations of the electrodes being determined by the operative, those of the "Big Boy" plugs being forced into the bores until the collars of the electrodes seat. The threaded portions of the upper ends of the electrodes extend into the bores and that part within the bores is covered with the paste. This forms a firm anchorage for the electrode.

The insulators are then dried at room temperature for from three to seven hours and they are then placed in racks and put into gas heated ovens in which they are baked for 24 hours, when the paste has become as hard and as enduring as the insulator, adhering to both the electrode and the insulator.

Shells, Bushings and Shell Electrodes.

Both the shell and the bushing are automatic screw machine products, being very carefully produced and submitted to double inspection to determine accuracy of workmanship, the requirements being very exact. The single shell electrodes of standard types and the three shell electrodes of the "Big Boy" plugs are what is known as a "fish hook" design, having a straight shank that is fitted into a bore in the shell and extending downward and curving upward somewhat in the form of a fish hook, the bend being considerably below the firing point. Claim is made that should oil be thrown upon the electrode it will drain to the lowest part and will not accumulate where it will close the circuit and prevent the "arcing" of the current between the two electrodes.

The shell electrodes are nickel manganese steel wire and are the same diameter for all plugs, .055-inch diameter. The electrodes of this type are formed and cut at one operation and the shells are drilled by jigs of a special type. The electrodes are fitted to the bores in the shells so they may be seated in them by hand. The assembly is by jigs and the electrodes are "staked in" in punch presses that so constrict the bores that there is positive metallic contact and the electrodes are firmly anchored. The cutting and forming of the electrodes and the "staking in" are all automatic operations.

Gaskets a Special Type.

The gaskets, top and bottom, are copper asbestos of special construction, being the French or enclosed type. In assembling the binding nut is screwed on to the center electrode, a soft lead composition washer holding it firm, and in turn the lock washer and the knurled nut. Then the insulator and the gaskets are placed in the shells and the bushings are seated loosely by hand. The plugs are then taken to benches in racks and each in turn is placed in a fixture and the bushing is seated by hand with

a two-handed special wrench. The object of hand fitting the bushing is to obtain a perfect gas tight seat without crushing and destroying the gaskets, and this has been found only certain with hand work. The expert operator can determine precisely when the bushing and gaskets have been seated by the "feel" of the lever, which obviously is not possible when assembly is in any other manner. The bushing and shell will expand in ratio to the heat to which they are subjected and the insulator will vary but little with varying temperatures. The gaskets must be sufficiently elastic to contract and expand and maintain the perfect contact that will insure against leakage, no matter what the pressure.

Tests for Service Qualities.

The insulators are all tested for electrical conductivity and resistance to excessive voltage, and in the final inspection the perfect concentricity of the insulator to the bushing and shell is determined, after the complete plug has been tested for leakage with 150 pounds air pressure, for upon this depends very largely the endurance of the plug. The adjustment of the electrodes is to gauge, so that the spark gap will be uniform. All details of construction are up to the United States specifications.

When the plugs have been finally passed upon they are packed in cartons, a carton containing 10 plugs or 100 plugs, the metric count being adopted because of its greater convenience in keeping stock.

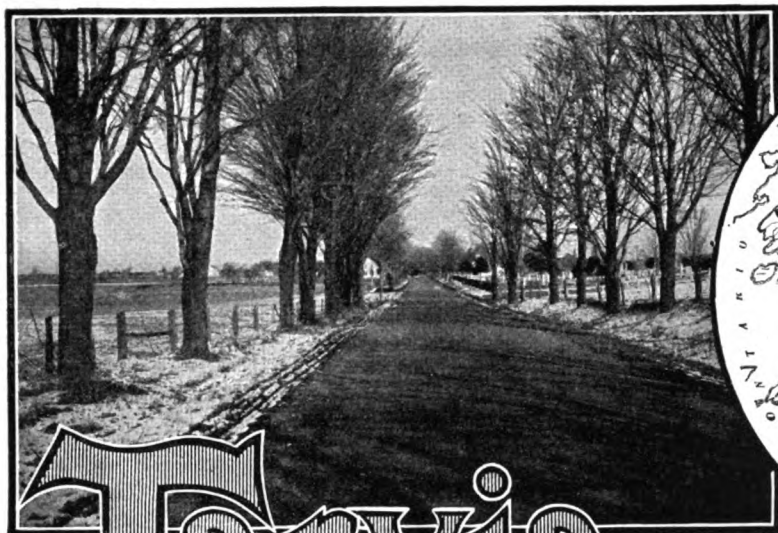
Statement is made that the company now has four times the space that was occupied by the factory of the Emil Grossman Manufacturing Co., which produced Red Head plugs and from which the patents covering the manufacture of these plugs was purchased.

The Red Head Spark Plug Corporation has no connection with the former manufacturer, but is a new organization that will specialize spark plugs only. Because of its factory equipment and facilities it can make deliveries immediately. This is a fact of considerable importance to buyers.

OVERHEATING.

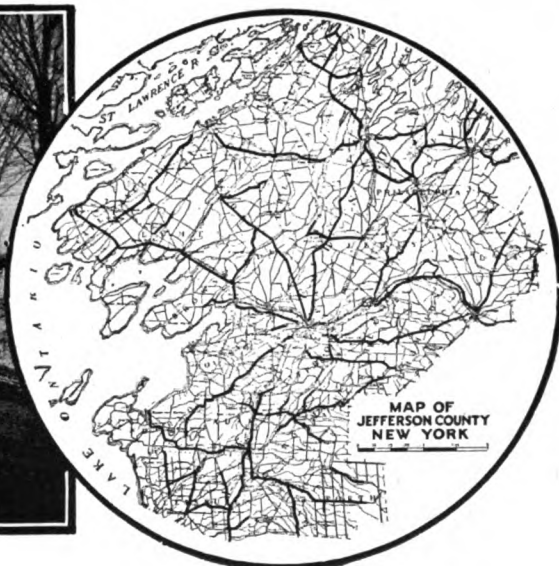
Trouble from overheating sometimes comes from using old hose connections between the engine and radiator. Rubber hose when it becomes old has a tendency to loosen up between the layers of rubber and fabric. The inner lining is then likely to fold back when the hose is being replaced, covering the opening so that the flow of water is retarded. It cannot be seen from the outside, but makes itself evident in overheating the engine. In a similar manner pieces of the rubber will come loose and lodge where they cut off circulation.

One should keep the engine free from carbon in the summer and keep the valve push rods adjusted close, have the mixture as lean as possible and make sure that the exhaust through the muffler is free. Care in the things enumerated will give immunity from most of the overheating troubles, if not all.



Tarvia

Preserves Roads—Prevents Dust



The illustration on the left pictures one of the Tarviated roads of Jefferson County, N. Y. The black lines on the map show the remarkable mileage of Tarvia roads in Jefferson County, N. Y.

—in Jefferson County, N. Y.

JEFFERSON County is solving the problem of low-cost, durable roads by the use of Tarvia and by co-operative action between the town and county authorities.

The towns provide machinery, tools, materials and labor. The county provides and applies the Tarvia. In addition, it makes a substantial money grant towards the cost of the improved road.

Maintenance costs of the new roads are adjusted on a "fifty-fifty" basis that is entirely satisfactory to both parties.

By this means, in less than three years 166 miles of modern, dustless, mudless, easy-traction Tarvia roads have been completed in this one county alone. These roads are water-proof, frost-proof and automobile-proof.

Mr. Henry S. Ball, County Superintendent, says these Tarvia roads "are in better shape today than when they were first built," and he sees "no reason why they should not last indefinitely."

Mr. Ball is right because his experience is in line with that of users of Tarvia in every part of the country.

Doubtless this co-operative plan will be of interest to other highway authorities. If so we will gladly send full details on request.

Special Service Department

This company has a corps of trained engineers and chemists who have given years of study to modern road problems. The advice of these men may be had for the asking by any one interested. If you will write to the nearest office regarding road problems and conditions in your vicinity, the matter will have prompt attention.

New York
Chicago
Philadelphia
Boston

St. Louis
New Orleans
Nashville
Duluth
Lebanon
Latrobe

THE BARRETT COMPANY, Limited:
Vancouver

The **Barrett** Company



Cleveland
Birmingham
Salt Lake City
Milwaukee
Youngstown
Bethlehem

St. John, N. B.

Cincinnati
Kansas City
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Toledo
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Halifax, N. S.

Pittsburgh
Minneapolis
Peoria
Washington
Columbus
Buffalo

Toronto

Detroit
Dallas
Atlanta
Johnstown
Richmond
Baltimore

Winnipeg
Sidney, N. S.



Carthage-Antwerp Road, Jefferson County, N. Y.—a Tarvia Highway.



The Carthage-Watertown Road—another tarviated Highway.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

ATLAS TIRE CO. HAS MADE GREAT PROGRESS.

The Atlas Tire Co., 1777 Broadway, New York City, announces that it is selling tires as fast as it can make them, and is also getting a good share of foreign business. The company has made great progress. It started in business less than two years ago with one store in Philadelphia. A capacity business was reached almost at the start, and since then the company has been getting all the business it could handle. In Philadelphia the company did a wonderful business in rebuilt tires and seconds.

The company opened a store in New York City a year later. At present it has four stores in New York, two in Philadelphia and one in Chicago. It is planned to open up at least 10 new stores within the next year, all of them in the South and Middle West.

The company's great success in the reconstruction of tires has been a vital factor in its growth.

PRESSMAN TIRE PLANS CHAIN STORES THROUGHOUT NATION.

The Pressman Tire and Rubber Co., Philadelphia, which was recently incorporated under the laws of Delaware with \$3,000,000 capitalization, has already leased several units of its proposed nation-wide chain-store system for retail distribution of tires, including Boston, Baltimore, WilkesBarre, Pa.; Scranton, Pa.; Reading, Pa.; Allentown, Pa.; Easton, Pa., and Harrisburg, Pa.

Other branches to be opened in the near future include New York, Chicago, Detroit, St. Louis, Cleveland and San Francisco. The Baltimore branch is located at 15 Mount Royal avenue.

The company has purchased for \$500,000 three properties, 250-52-54 North Broad street, Philadelphia, in the heart of the automobile district. The officers of the new corporation are: President, and general manager, Herman Pressman; vice president and sales manager, William J. Ryan; comptroller and office

manager, G. W. Manwaring; director, R. T. Moyer; general counsel, Michael F. Donahue.

The Pressman Tire and Rubber Co., through contracts, controls the output of three factories, a total of about 700,000 tires annually. Negotiations are under way for the output of other factories. The activities of the company embrace the entire tire field.

The principal factories now turning out tires for the company include the Sebring Rubber Co., manufacturer of the Omar tire; the New Castle Rubber Co., manufacturer of the Liberty tire, and the Universal Rubber Co.

Arrangements are being made for the establishment of distributing branches in all the principal countries of South America. Because of its mammoth business the company is enabled to sell tires at unusually attractive prices. Its sales are made under liberal guarantees.

PANOL MAKES FINE POLISH CLEANER FOR AUTOMOBILES.

Car owners and garagemen who have not tried Panol, the polish cleaner, are invited to write to the maker, the Panvar Co., Inc., Bulletin building, Philadelphia, for a sample, which will be furnished for 25 cents. The company is so confident regarding the merit of its product that it has adopted the slogan, "A Try Means a Buy." The sample is liberal enough to permit a thorough test and a comparison with other polish cleaners on the market.

Panol, when used on automobiles, is a splendid dry wash, leaving a rich gloss free from dust-catching grease or oil. It makes scratches disappear and keeps the windshield clear. It is, as the maker states, "the soapless, greaseless way to keep your car everlastingly new."

Panol removes all grease and grime down to the original finish, and restores the original factory luster. The producer promises that Panol will leave "a clear surface, smooth as glass and dry as bone; no greasy surface; no milky smear." It is also claimed that Panol lengthens the life of woodwork.

Panol is also intended for use in households, offices, hotels and restaurants. The retail price is \$1 per quart, \$3 per gallon. It is applied with a soft cloth. On large surfaces a sprayer may be used. Panol contains no wax, no acids or alkali. It is known as "the oil with a thousand uses."

MOTOR CARS IN HYOGO.

The number of motor cars in the Hyogo prefecture of Japan in 1918 was four, in 1912 there were 14, in 1916 there were 89, and at the end of 1918 there were 282 cars registered. The city of Kobe, which is located in this prefecture, is said to have 182 automobiles.

The Digest, published by the Motor and Accessory Manufacturers' Association, has adopted a new dress and policy and is aimed to be of greater service to the members. The July issue, comprising 12 pages, is crowded with interesting articles and features.

HOTEL EMPIRE

Broadway at 63rd Street
NEW YORK CITY

Room, use of Bath	Room with Bath
\$1.25	\$2.00
Parlor, bedroom and bath,	
\$3.00	

Add to the above rates, 50c. for each
additional person.

All Surface Cars and Fifth Avenue Busses
pass the door.
Subway and "L" stations—
two minutes.

Beautiful Central Park—One block.
OUR RESTAURANT is noted for its
excellent food and moderate prices.
P. V. LAND, Manager.

Centrally
Located
Near all the Famous
Shops and Theatres





W. 72nd St.

Between Broad-
way and
Columbus Ave.

Subway, Elevated, Bus Lines and
Surface Cars within a half block.

300 Rooms 200 Bathrooms

ABSOLUTELY FIREPROOF

Room with private bath.....\$2.50 and up	Parlor, bedroom with private bath....\$4.00 and up
Parlor two bedrooms with private bath..\$6.00 and up	

Comfort, Refinement and Lux-
ury combined with very
moderate rates.

Restaurant and Service is the best, at reasonable prices.
72nd Street entrance to Central Park, one block, all shopping and amusements within five to
ten minutes. Riverside Drive and Hudson River two blocks. Send for illustrated booklet.

EUGENE CABLE, Manager

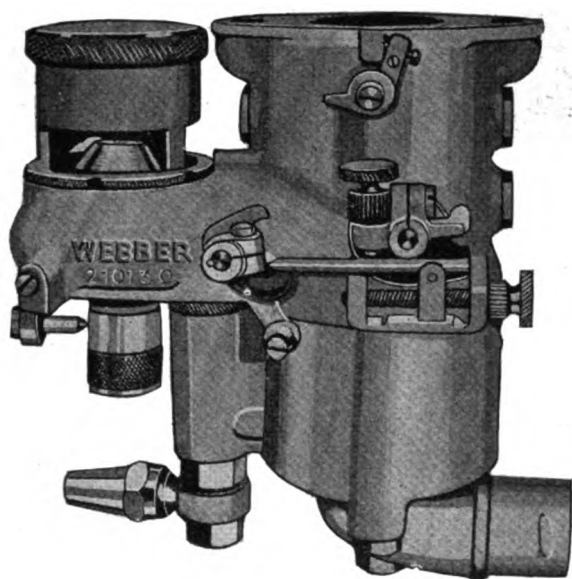
Hotel Hargrave

NEW YORK

WOULD YOU OWN A BALKY HORSE?

WHY OWN A BALKY AUTOMOBILE?

Install a WEBBER CARBURETOR



It remained for Webber to give you the last benefit, unheard-of flexibility, freedom from worry, with a minimum of expense.

*Whether You Drive a Four
or a Twelve*

You don't know how different that automobile will run with a Webber Carburetor. Give your machine a treat and buy one now and notice the difference.

Satisfaction Guaranteed

Webber Manufacturing Co.

REAR COPLEY-PLAZA HOTEL

66 Stanhope Street

Boston, Mass.

Agents Wanted for Open Territory

SPECIAL SALE—AUTO TIRES

GUARANTEED 4000 MILES

If a tire fails to give service of 4000 miles we will replace it with another tire for $\frac{1}{2}$ price marked below:

Size	Plain	Non-Skid	Tube
28x3	\$6.45	\$7.45	\$2.30
30x3	7.45	8.35	2.15
30x3½	8.95	9.95	2.40
31x3½	9.45	10.45	2.45
32x3½	9.95	10.90	2.50
34x3½	10.45	11.30	2.80
31x4	13.45	14.60	3.20
32x4	13.95	14.95	3.30
33x4	14.45	15.45	3.35



Size	Plain	Non-Skid	Tube
34x4	\$14.95	\$15.95	\$3.45
35x4	15.45	16.95	3.50
36x4	15.95	17.50	3.60
34x4½	18.45	20.45	4.30
35x4½	18.95	20.95	4.40
36x4½	19.45	21.45	4.45
37x4½	19.95	21.95	4.50
35x5	20.95	23.45	5.10
37x5	21.95	24.75	5.30

Deduct 2 Per Cent. When Check or Cash Accompanies Order.

10% Deposit Required on All C. O. D. Orders.

We Carry a Full Line of New and Reconstructed Tires.

ATLAS TIRE COMPANY,

Tires and Tubes Shipped
Express Prepaid

Telephone Poplar 2970

822 BROAD STREET, PHILADELPHIA, PA.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

TRADE OUTLET

Magneto and Generator Exchange of N. E.

44 COLUMBUS AVENUE, BOSTON, MASS.

SAVE 50%

Offers—

Quality Service for your car.

Starting, Lighting, Ignition.

One year guarantee on repairs and installations of all makes.

Everything pertaining to Auto, Electricity, Magneto and Generator Parts. We have one of the best equipped shops in New England devoted exclusively to this work.

BOSCH, SPLITDORF, EISEMANN, DIXIE, BERLING MAGNETOS and Parts Always in Stock.



Tires Guaranteed 5000 Miles

30x3 plain.....\$10.00
Non-Skid\$10.50
30x3½ plain.....\$13.50
Non-Skid\$15.00
Big saving on other sizes and tubes also. Trade in your old tires. 20% deposit required on C. O. D. orders.

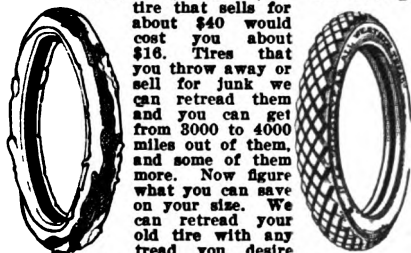
Write for lists to

M. Liben & Co.

793 J 7th Ave., New York City.

IT'S EASY TO SAVE MONEY

It's only a question of knowing how. Save the difference between \$40 and \$16. The average



tire that sells for about \$40 would cost you about \$16. Tires that you throw away or sell for junk we can retread them and you can get from 3000 to 4000 miles out of them, and some of them more. Now figure what you can save on your size. We can retread your old tire with any tread you desire for the prices quoted below. Send your tire in today and we send it back to you in three days.

Price List to Retread Your Old Tires

Size	Retread	Size	Retread
28x3	\$8.00	34x4	\$14.25
30x3	8.50	34x4½	17.00
30x3½	10.00	35x4	17.00
31x3½	12.00	35x4½	18.00
32x3½	11.00	35x5	21.00
31x4	12.75	36x4½	19.00
32x4	18.00	36x5	21.50
33x4	18.75	37x5	22.00

Add 10 Per Cent. Extra for Non-Skid.

We have a large stock of retreaded tires for sale. Add \$1 to above list on the size you want and send your order. Mail orders given prompt attention. All orders accompanied by check or money order will be allowed 5% discount.

BOSTON AUTO TIRE EXCHANGE

304 COLUMBUS AVENUE, BOSTON.

—CLASSIFIED ADVERTISING PAYS—

Advertise the bargains that you have to offer.

8000 Buyers Read MOTOR TRUCK.



BOSTON'S Finest Equipped Auto Electric Repair Service

With a staff of trained electrical men we can offer auto owners expert service, coupled with promptness and personal attention to all electrical repair problems. We also repair any electrical equipment used on a motor car. Official service and parts representative for

**AUTO-LITE LIGHTING AND
STARTING SYSTEMS.**
Complete Stock of
GENUINE PARTS.

All Work and Parts Guaranteed.

William H. Flaherty Co.

74 CUMMINGTON ST., BOSTON, MASS.

TIRES AND TUBES

Demonstrating and Factory Repaired. Economy, Quality, Price. All Standard Makes.

Size	Tires	Tubes
30x3	\$5.00	\$1.35
30x3½	6.00	1.45
32x3½	8.50	1.50
31x4	7.25	1.65
32x4	8.00	1.60
33x4	8.75	1.70
34x4	8.75	1.70

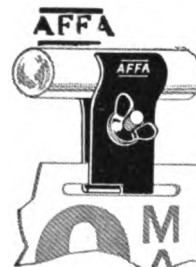


No Junk. Satisfaction Guaranteed.

Size	Tires	Tubes
36x4	\$9.00	\$1.75
34x4½	9.25	1.75
35x4½	9.50	1.80
36x4½	9.75	1.85
35x5	10.50	2.00
37x5	11.00	2.20

Write for Prices on Odd Sized Tires. TERMS: \$1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although used tires are not guaranteed for any definite number of miles, we guarantee our tires to give the best service in proportion to the prices paid, or reasonable adjustments are made.

LIBERTY TIRE CO., 2119 So. Michigan Ave., Dept. 1, Chicago, Ill.



SPECIALTIES for the Ford

They stop the rattle in—
The Brake Rod Supports for 35c.
The Brake Rod Clevises for 50c.
The Spark and Throttle Rods for 25c.
The Steering Spindles for 50c.
They serve many other useful purposes and are

inexpensive. JOBBERS, DEALERS, write for prices and folder which mean money for you. Affa Specialty Co., 34-D Southbridge St., Worcester, Mass.

Magneto Repairs

Skillfully Done. Assured Satisfaction. Prompt Service.

The repair work turned out of this shop is of the highest merit—because I know how. If you have electrical and magneto troubles, no matter whether it is a

BOSCH, SPLITDORF-EISEMANN, or any other make, I can fix them. My well-appointed plant, coupled with skilled workmen, assures you of expert magneto service. Send in your magneto. 24-hour shipment.

Rebuilt Magnetos, Platinum Parts, Generator Brushes, Bearings, Etc.

Correspondence Invited.

The Magneto Shop

JOHN BRUNSWICK,

187 Massachusetts Ave., Boston, Mass.

FORD OWNERS—Buy a safe T first Rubber High Class Coll Box Protector—only \$2.00. Save \$20.00 damages on a rainy day. Big profits for agents, jobbers and dealers.

SAFE T FIRST GASKET CO.,

316 West 134th St., New York City.

EXPERT REPAIRING; every known Magneto and Ignition System, Starters, Motors, Generators, Magneto Exchange and Repair Shop, 269 Halsey Street, Newark, N. J.

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TRADE OUTLET

TIRES

JOB LOTS

Obsolete, Surplus Stocks and
Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS

250 West 54th Street

New York

AUTO SAVE 50-90% PARTS FOR 400 CARS

POPE, PACKARDS, PIERCE, BUICK,
STEVENS-DURYEA, KNOX, OVER-
LAND, ETC.

Motors	\$25.00 up	Presto Tanks . . .	\$ 4.50 up
Magnetos	4.00 "	New Spotlights . .	2.00 "
Carburetors	3.00 "	Generators	10.00 "
Rear Axles	15.00 "	Gears	1.00 "
Front Axles	5.00 "	Bearings	1.00 "
Cylinders	5.00 "	Radiators	10.00 "

\$12 Diamond Bumpers \$5.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

84 Wooster St., Hartford, Conn.

AUTO PARTS.

50% to 90% OFF List.

24 Hour Service. Unlimited Stock.

Pope-Hartford, Columbia, Reo,
Overland and 200 other makes.

Motors, \$20.00 up	E. Presto Tanks, \$4.00
Magnetos, \$3.50 up	B. Presto Tanks, \$4.75
Cylinders, \$3.00 up	Bearings, 50c up
Springs, \$1.00 up	Rims, \$1.00 up

1000 Other PARTS Bargains.

If you want any part not listed here,

Write Us—We Have It.

Conn. Auto Parts Co., Inc.

1070 Main St., Hartford, Conn.

Atwater-Kent Sales Co., of New England

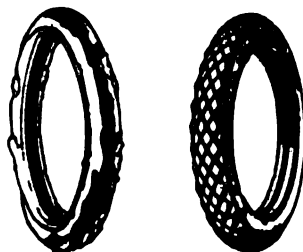
883 BOYLSTON ST., BOSTON, MASS.

Official
SALES AND SERVICE
For New England.

Complete stock of parts always
on hand.

Write for Price List.

BOSTON RETREAD TIRE CO.



Before

After

OUR METHOD OF RETREADING IS
DIFFERENT FROM OTHERS.

We use all Goodyear first quality stock
and retread bands and can absolutely
guarantee from

3000 to 3500 Miles.

We will replace a new tire for every
one that our work does not give satis-
faction.

Tires called for and delivered. We pay
express charges one way on all out-of-
town orders.

Price List Mailed Upon Request.

BOSTON RETREAD TIRE CO.

70 Clarendon St., Boston, Mass.

H. Gordon, Ltd., 8a City Road,
London, are open to take up
the **SOLE AGENCY** of
leading American
Firms for

**Light Motor Cars and Access-
ories, Motor-Cycles and Ac-
cessories, Leather Belting.**

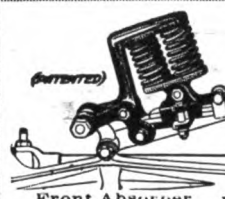
References: Messrs. Bowring & Co.,
Battery Place, New York City.

We Are Exclusive
SELLING AGENTS
for the N. F. G.
CARLISLE CORD TIRE.

Dealers write for our special propo-
sition.

CAMBRIA TIRE EXCHANGE.

204 Columbus Ave., Boston, Mass.



FOR FORD CARS.
"Champion" Shock Ab-
sorbers. The perfect
spring suspension. Ab-
sorbs all jar and re-
bound. Easy to attach.
Fully guaranteed.
Makes Fords ride as
easy as any \$5000 car.
Ford dealers, agents
and owners, this ad is
worth \$10 to you. Ask
Front Absorber why. Write today.

**Champion Shock Absorber Sales Co.,
Inc., Indianapolis, Ind., Mfs.**

Auto Mailing Lists

Send for our free complete Price List
covering Auto Dealers, Owners, Ford
Dealers, Truck Dealers and Owners,
Garages, Auto Mfrs. and etc., any state.

A. F. WILLIAMS, Mgr. of List Dept.
168 W. Adams St., Chicago, Franklin 1182.

Every Ford Owner Should Read
"TRANSFORMING THE FORD." Tells how to
secure smooth, positive brake action that no
car can excel. A little "transforming" and
your car will glide to a quiet, quick stop with-
out the annoying, irritating clatter that you
now experience. It will go into low or reverse
without jumping or jerking and you can pick
up speed with all the smoothness and ease of a
high-priced car. All accomplished without ad-
ditional expense and the result is a clear saving
of 75 per cent. in one direction alone. "TRANS-
FORMING THE FORD" tells how it's done.
Send for your copy this very minute. IT IS
FREE. Cormack & Co., 500 Fifth Ave.,
New York City.

AUTO PARTS—At Your Own Prices.
We can supply parts for nearly every
make of car. 648 Packards, Interstate
Fours, also Truck parts, GMC and
other makes.

Write us for Parts. We have them.

STRANDWAY AUTO PARTS CO.,
192-195 H. St., South Boston, Mass.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Starters— Generators— Magneto—

We specialize in the repairing of all makes of Starters, Generators and Magnetos.

We offer prompt and efficient service. Our location and facilities assures the highest quality work and prompt delivery to all parts of the east. All work guaranteed.

New England Service Representative Connecticut Ignition

All parts in stock. Parts list at request.
New England Sales and Service.

Dayton Starting—Lighting System for Ford Cars

V. A. NIELSEN COMPANY
708 Beacon Street, Boston, Mass.

“UNIQ” RUNNING BOARDS

Eliminate that “TINNY” look from the Ford car

Every Ford owner who sees “UNIQ” Completely Assembled Wooden Running Boards is enthusiastic about having his car similarly equipped.

Not only do “UNIQ” Boards wonderfully improve the appearance of the Ford, but they are a much safer step, not slippery in wet or damp weather like iron boards.



STYLE “A” LINOLEUM TOP, WITH ALUMINUM BINDING
Also Made with Pyramid Aluminum Top—Style “C.”
Complete with set of Aluminum covered bolts for attaching.
EXTRA LENGTH “UNIQ” Boards can be had for any size extension commercial Ford outfits. Prices on request.
THE C. SPIRO MFG. CO., 68-70 East 131st Street, New York City

The Accessory and Garage Journal

\$2 the Year, 20 Cents the Single Copy.

The only American publication devoted exclusively to the Power Vehicle and Allied Industries and Trades. A guaranteed circulation of 25,000 copies to trade interests only.

Address all communications to the

TIMES BUILDING
Pawtucket Rhode Island

DETROIT HAYES STORAGE WIRE BATTERIES WHEELS

NEW ENGLAND SALES & SERVICE

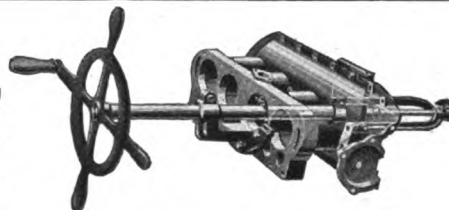
MITCHELL & SMITH INC.

1090-1092 COMMONWEALTH AVE. BOSTON, MASS

“WE REPAIR ANY MAKE OF BATTERY OR WIRE WHEEL”



Repairmen,
Listen!



Patented May 19, 1914; Dec. 15, 1914; June 20, 1916; June 26, 1917.
The Heiser Improved Cylinder Reboring Tool for FORD MOTORS is the only reboring Tool in the world that is self-sharpening. It is the only tool that rebore between centers—this insures a finished cylinder, square with the crankshaft, round, straight, true and free from taper. It is adjustable and the only tool that will rebore different sizes without losing the adjustment. The best mechanic in the world can't build reputation without proper TOOLS and EQUIPMENT. THE HEISER IMPROVED CYLINDER REBORING TOOL makes good shops out of poor ones and better shops out of good ones. Write today for full particulars.

HEISER SPECIAL TOOL CO., 216 Rogers Bldg., Kingston, Mo.



Giant Searchlight

The highest quality lowest priced lamp produced.

LIST PRICE With Mirror : \$6.00
Without Mirror : \$5.00

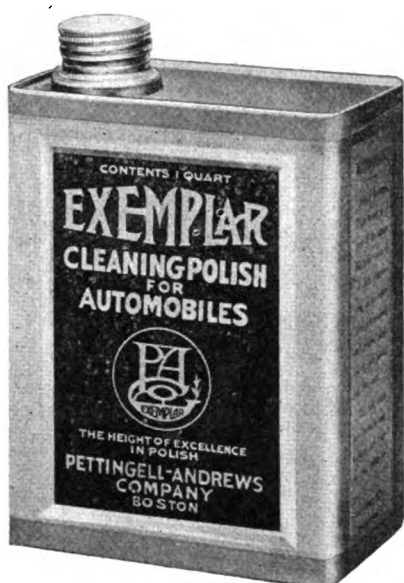
CULVER-STEARN'S MFG. CO.

Worcester, Mass.
Detroit, Mich.

Agents:—To sell Factory Reconstructed Mileage Guaranteed Tires. Exclusive territory to good live wires. Excellent money making proposition to agents. Write at once.

ATLAS TIRE CO., 1777 Broadway, N. Y. City

(When Writing to Advertisers, Please Mention the Automobile Journal.)



Exemplar Tar and Road Oil Remover

A single application does the business. It loosens up and removes the most stubborn splotches of tar and oil—the stuff that does most to crack and kill the finish of a car. And there is nothing injurious or inflammable about it.

To give your car the “million dollar” look and keep it looking that way, use

EXEMPLAR

It washes, cleans and polishes

4-oz. Sample Bottle \$.25
1-qt. Size Can . . . \$1.00
1-pt. Size Can . . . \$.60

Dealers:—

*We have an attractive proposition for you on “Exemplar.”
Write for it.*

AUTOMOBILE DIVISION

Pettingell-Andrews Company

100 Brookline Avenue, Boston, Mass.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

MOSSBERG

ALL STEEL WRENCHES AND TOOLS

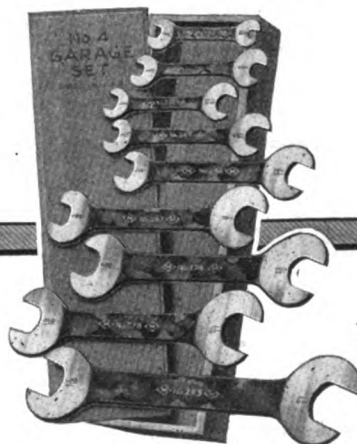
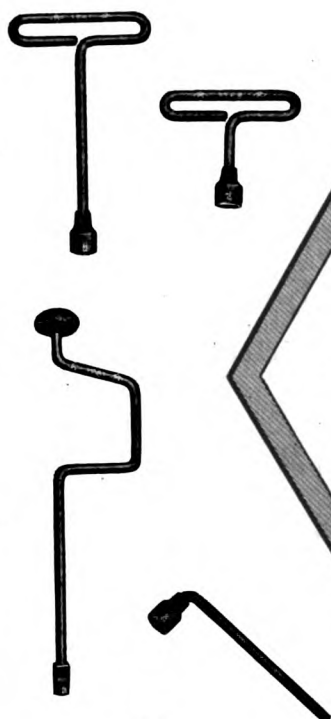


Leadership in the manufacture of tool equipment has been gained and maintained through adherence to principles of manufacture which insure to the user of Mossberg products the utmost in value and service.

Illustrated here are No. 4 Garage Set of Open-End Wrenches, with one opening of each when fitting U. S. Standard Bolts and the other opening of the same wrench fitting S. A. E. cap screws of the same dimensions; also solid handle All Steel Socket Wrenches, Speed Brace and Offset; and K-9 Adjustable Wrench.

Mossberg No. 600 Salesman of All Steel Tools for Fords, and No. H Salesman which contains a large assortment of All Steel Indestructible Socket Wrenches with large variety of sizes and fittings.

Send for complete 1919 catalogue and price list.



FRANK MOSSBERG CO.

WRENCHSMITHS FOR 20 YEARS

ATTLEBORO, MASS. U.S.A.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Masters

AUTOMOTIVE ACCESSORIES

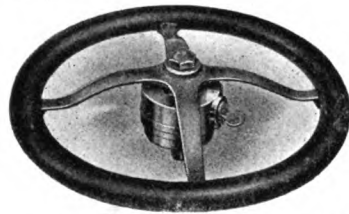
Absolutely Prevents the Theft of Your Ford

You don't need to be told that the Ford is the most easily stolen car in America. Every time you leave it for a few minutes it is at the mercy of thieves and joy-riders.

You try to protect it with insurance; but the policy won't buy the car back if it is stolen.

Foil the thieves! Lock your Ford so that it can't be stolen! Put on a

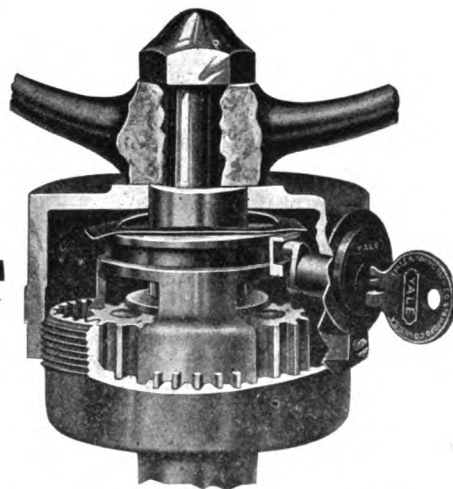
MASTERS STEAL-PROOF LOCK



This lock is easily put in place on the steering post; it clamps the gears so that the front wheels cannot be used for steering. It cannot be picked—it's a Yale—it cannot be broken; it cannot lock the car accidentally for the locking bolt rises into mesh.

You cannot remove the key except when the car is locked, so that when the key is in your pocket you have that satisfactory feeling of security—it's locked.

Before it is too late, ask your accessory dealer or send \$6.50 to Masters Manufacturing Company.



Masters Manufacturing Company
Woolsey Square, Jamaica Plain, Boston, Mass.

(When Writing to Advertisers, Please Mention the Automobile Journal.)



BRUNSWICK Tires are built to supply the needs of every car owner. They are made in all standard sizes—cords with "Driving" and "Swastika" Skid-Not Treads—Fabric with "Plain," "Ribbed" and B. B. C. Skid-Not Treads.

Start with one BRUNSWICK today. You will soon use them for complete equipment. Put one Brunswick on record against any tire of whatever name or fame.

BRUNSWICK Tires are made for thoughtful drivers seeking greater all-around service and economy. Sold on a 5000-mile adjustment basis—you get more. The dollars you save by increased mileage will soon equal the value of a new set all around.

BRUNSWICK Tires assure you speed, comfort, safety, economy and easy driving.

Manufactured by

The Brunswick-Balke Collender Co.

Distributed by

THE BOOTH-LANGMAID CO.

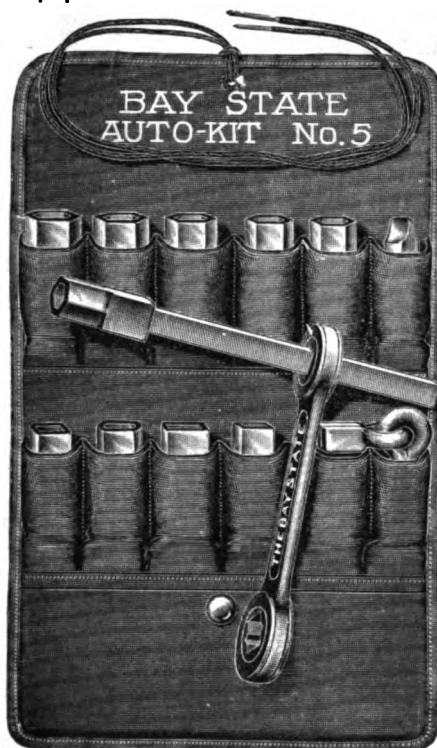
682 Beacon St., Boston, Mass.

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Sold by All Jobbers and Dealers

The specialties offered have been proven for their superior quality, utility and remarkable service-giving merits. They save and endure in any usage and have afforded full satisfaction. That is why the demand is universal, why they are stocked by the trade and the best guarantee that they have advantages that recommend their use.

Equipment made on a quality basis, designed and built by specialists, and produced to do certain work, must excel in efficiency. Every item represents the highest development possible to attain and this quality applies as well to material used, workmanship and finish. There is a decided and lasting economy in dependable equipment.



BAY STATE "AUTOKIT" SOCKET WRENCH SET NO. 5 FOR FORDS.

Ten heavy gauge steel sockets comprise this set, case hardened and as strong and tough as they can be made. Sixes, hexagon, square and oval, especially adapted for use on the Ford car, but carefully selected for use on any car or truck.

The set contains also a hardened steel screw driver, finely finished, universal joint, to reach the difficult places about an engine, seven-inch steel extension bar, double end ratchet wrench which fits all the sockets and the bar and which is reversible by simply turning it over.

The set is contained in a neat black cloth roll made of heavy drilling—not pantasote. The pockets in the roll are made to stand open when empty so that insertion of the parts may be quickly and easily accomplished.

List Price, \$5.00.

Sold by all dealers or direct

BAY STATE PUMP COMPANY

(Manufacturers)

1000 PURCHASE ST.

BOSTON, MASS.



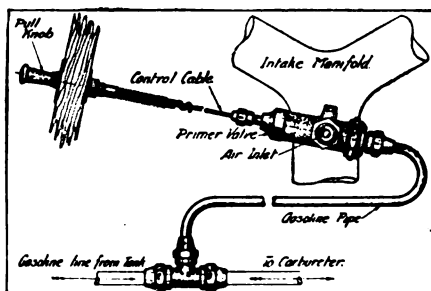
STICKKIT "BAY STATE WRENCH SET."

This set is operated by a double ended ratchet wrench of the most convenient size for carrying in the tool box of the automobile or truck. The wrench will fit four sizes of nuts, and with the sockets 11 different sizes of nuts and cap screws. One end of the shank of the wrench has a 1 1/4-inch ball fitted to it, which is easily removed, while the other end of the shank has a ball catch, fitting flush with the side of the shank for holding socket wrenches securely in place. The extra sockets are very easily removed from the shank.

The set fits the following sizes of nuts and cap screws, the short diameter being given: Hexagonal, 1 5-32, 1 3-32, 29-32, 13-16, 23-32, 21-32, 11-16 and 1/2 inch. Square, 21-32, 11-16 and 1/2 inch.

Extra sockets any size desired are furnished at a moderate price.

List Price, \$3.50.



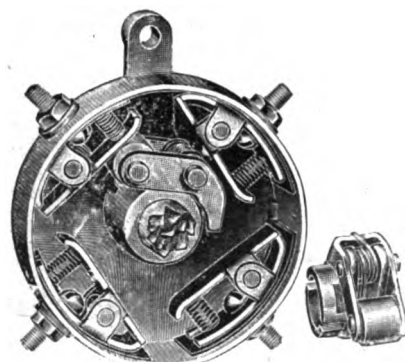
COPLEY PRIMER.

The Copley Primer embodies a new principle in primer construction and operates by the suction of the pistons in the cylinders of the engine. It is not a dashboard pump, but a permanent addition to the fuel system attached direct to the engine intake manifold.

It is the only primer using the carburetor principle of high velocity air to break up the gasoline into a thoroughly atomized explosive priming charge. This atomizing effect is obtained by using a venturi tube for the gasoline and air to pass through on the way to the manifold. Air is drawn in through a vent and check valve at the side of the primer. The gasoline and air rushing through this venturi tube is drawn into the choke portion of the tube and enters the manifold at high velocity, thoroughly aerized and atomized. As the primer is attached directly to the engine intake manifold, and operates only when the engine is in motion, there is no chance for condensation to take place, a common fault in many primers.

The Copley Primer by actual tests under most difficult conditions, starts the motor at the first touch of the starter button. Regardless of the weather conditions the motor starts instantly. This primer delivers to the engine a rich explosive charge of carefully determined proportions. The action is continuous as long as the primer is held open, making the primer automatic in action. This action is so perfected in the Copley Primer that the engine may be run continuously for short periods without assistance from the carburetor.

List Price, \$5.00.



THE BAY STATE COMMERCIAL TIMER FOR FORD CARS.

The Bay State Timer consists of a new contact principle, designed to overcome timer troubles and to produce more power, quicker acceleration, quieter running and much longer life in the timer than ever before possible. All contacts are made of high grade hardened steel.

A study of the cut will show that the construction is unusual and that the contacts are made by means of the usual roller and spring, contacts of a hinged type being employed, allowing a steel against steel contact all the way around and these steel parts are finished to a glass like hardness, insuring long life. It is needless to say that the wearing qualities will prove far more durable than the usual fiber construction.

In the Bay State Timer the arcing occurs at the bent ends of the contact—at a distance from the flat surface of the contact—where it can do no harm. Consequently there are no soft steel parts to burn or cause poor contacts. As fiber is not subject to wear in the Bay State Timer, none of the troubles caused by its usual use are present.

In this timer complete resilience of contact is obtained by making both the brush and the contact yielding. This construction results in smooth, even, quiet action, and in perfect adaptability to any eccentricity of the time shaft—a feature of utmost importance. A distinctive, efficient timer that affords distinctive and lasting service.

List Price, \$2.50.



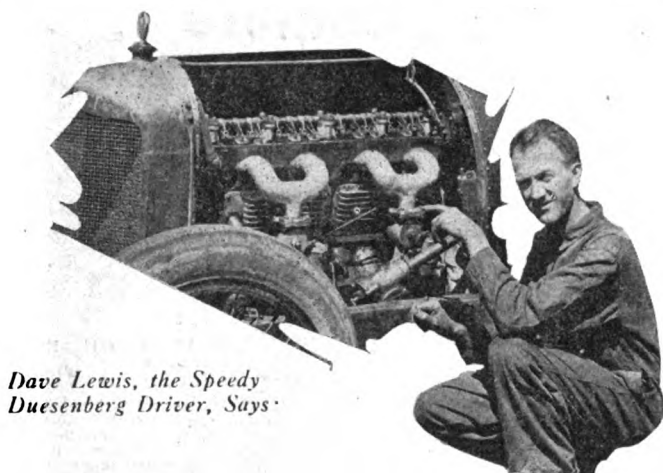
BAY STATE AUTOKIT SET NO. 1.

The Bay State Autokit No. 1 is a high grade set of 31 socket wrenches, with swiveling reversible ratchet handle, several extension shanks, a universal joint and a heavy screw driver. By means of the various combinations which these units make possible, it is easy to fit and remove any nut or cap screw on a car by a ratcheting motion. One long socket fits the spark plugs, which can in this way be removed without danger of breakage.

The outfit is packed in a neat wooden box with each wrench in a separate section, pockets are also made for holding the extension rod, universal joint and spark plug wrench. The set occupies a small amount of space and is easily carried in the tool box of the pleasure car or truck.

List Price, \$12.00.

(When Writing to Advertisers, Please Mention the Automobile Journal.)



*Dave Lewis, the Speedy
Duesenberg Driver, Says*

"It is the Greatest Power Producer and Gas Saver I Have Ever Seen"

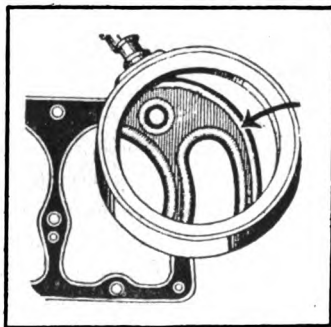
The terrific speed of the Duesenberg-Meteor No. 38, driven by Dave Lewis July 4th, is in no small way the result of the perfect compression of this remarkable engine which was equipped with a Liberty Power-Plus Gasket.

This superior gasket is new. It is a revelation in gasket construction—the only cylinder-head gasket made that has the *seamed edge* which is an exclusive feat-

ure of ours. This seamed edge absolutely eliminates blow-outs, prevents compression leakage, makes the motor 10% to 20% more powerful, more flexible, more dependable.

Liberty Power-Plus Gasket now made only for Fords, Dodges, Maxwells, Chevrolets, and Overlands. With a "Power-Plus" installed you can take *any hill on high!* Ask your garage-man—he has the Power-Plus for your car. Liberty Power-Plus Gaskets are made only by The Fitzgerald Mfg. Co., Torrington, Conn.

This is The Pierce-Arrow of gaskets. Made of finest copperized steel. Will not check, bend or break. Good for 25,000 miles—and more.

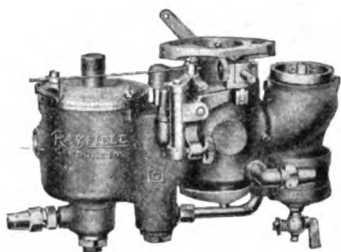


Note. The Seamed Edge! Old-fashioned gaskets may cost less but it's poor economy to have your motor only 50% efficient, get a "Power-Plus."

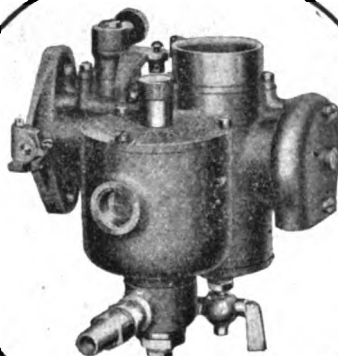
Liberty
POWER-PLUS
GASKETS
*A Radical
Departure in*

(When Writing to Advertisers, Please Mention the Automobile Journal.)

Rayfield Leadership Acknowledged by Engineers for Ten Years



MODEL G



MODEL M

Rayfield Carburetors have always been considered by the motoring public as representing the highest standards in carburetor performance.

There are sound reasons for this Rayfield supremacy.

Motorists have found that a car equipped with a Rayfield not only performs better but operates more economically over a period of months.

The big underlying reason for this performance is that in design the Rayfield is mechanically correct. It is this perfection which gives you more

miles per gallon. It sends your car to the front in crowded traffic and carries it over hills and through sand without hesitation.

The Rayfield Carburetor at its price represents an unusual carburetor value. Dealers and car owners everywhere who have experienced a new satisfaction in motoring with a decrease in expense, constantly testify to the fact that Rayfield represents greater economy in the long run.

Distributors and Service Stations everywhere.

BENEKE & KROPF MANUFACTURING CO.

Successors to Findeisen & Kropf Manufacturing Co.

21st and Rockwell Streets, Chicago, Illinois

RAYFIELD

CARBURETORS

(When Writing to Advertisers, Please Mention the Automobile Journal.)



Without Apron



Apron Attached

APRON FOR FORD CARS

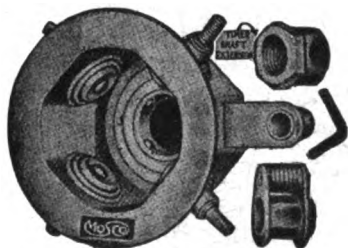
It adds greatly to the appearance of the Ford and gives a touch of refinement in design that makes it look like the more costly cars.

The Mosco Apron stiffens the fenders and eliminates the rattle. It is so designed that the air current is increased which adds to radiation efficiency.

Easily and quickly installed and made so that number plates can be attached. There is also a special device for holding the crank handle.

PRICE COMPLETE \$6.50 Sold by all Dealers and Jobbers or direct

Improved Bemus Ball Contact Timer for Ford Car



Facts That Every Ford Owner Should Know

Easier Starting Grease Cannot Prevent Contact

Unbreakable Heavy Steel Shell

Smoother Running Contact is Positive

Longer Life No Fibre Ring to Wear Humpy

The **BEMUS** is an **IDEAL TIMER** for the **FORD** high speed, short stroke engine, because form of contact is the only one which is correct both electrically and mechanically. The brush comes in contact only with the four balls, touching no fibre or insulation. The balls are so located that each has a track of its own on the brush. The brush itself has been still further increased in diameter, and these two latter features combined will materially lengthen the life of wearing parts of timer.

MOUNTING is direct on the time shaft by means of an extension piece which is screw threaded on to shaft, and runs in ball bearing placed in recess of timer shell. This means that each of the balls is equi-distance from the brush. **RESULT**—absolute precision of timing.

STARTING—The chief cause of starting trouble in the **Ford** car is the presence of a body of hardened oil on the flat contact segments of the ordinary type timer, which prevents passage of current from the brush until continued turning has scraped off the grease. In the **BEMUS** the use of balls for contacts eliminates this source of trouble, as but little oil is used, and the balls cannot retain more than the slightest film on their surfaces.

PRICE COMPLETE \$3.00 Sold by all Dealers and Jobbers

Motor Specialty Co., Waltham, Mass.

Makes Any Ford A Perfect Riding Car

Completely absorbs all shocks. Controls the rebound, side sway and all chance of springs breaking

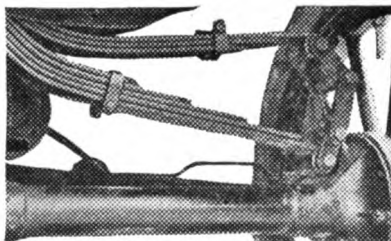


Easy to apply as any shock absorber. Anyone can do the work. 100% protection for Ford pleasure cars or trucks

The double action of springs is controlled by the opposite arch and suspension. Practical equipment that is guaranteed to afford full satisfaction in any service, not to break and made of the best alloy spring steel.

It greatly improves the appearance and makes the Ford look like a high priced car. For comfort, safety and efficiency it adds 100% to the service value and life of any passenger car or truck.

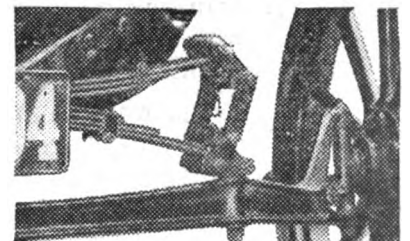
It Absorbs the Rebound or Upthrow



Rear View

By installing Beckman Springs the original spring on a Ford is lowered 2½ inches automatically. This action reduces the equivalent amount of spread on each side of the lower spring as well as the play in the steering. In other words, it improves the steering.

Approved by the leading spring manufacturers



Front View

YOUR FORD NEEDS IT

It stops the squeaks and rattles. These springs cannot dent or bump the body. Easy to clean and will last longer than the car. Our trial offer money back iron clad guarantee goes with every sale.

JOBBER AND DEALERS:

This is car equipment of the highest quality, efficiency and service. Sells right and will prove to be a leader with you. Write for details and trade discounts.

BECKMAN
METAL PRODUCT CO.
409 BECKMAN BLDG
SUPERIOR AVE.
NORTH WEST CLEVELAND, O.

FORD OWNERS:

Save your springs and ride in comfort. Price \$16.50 per set. Our guarantee protects you. Order from your dealer or direct. Catalogue at request



A Quality Oil Victory

Won year after year against all competition in every test and under every possible working condition.

The saving to user amounts to colossal figures in money on the basis of more miles, less repair and upkeep costs, less wear and added service life.

It is one of the few motor oils that your jobber and dealer will recommend and guarantee. Just tell them the model of car you operate and they will be able to supply the exact grade that you should use. (There is a grade for every engine.)

They have it in sealed containers—the trade mark is your protection. Ask for it. Demand it. All good dealers sell it.

Do not gamble when buying oil—specify this brand. It costs no more than any other good lubricant, yet in more miles for a given quantity, with less soot and carbon, greater dependability and satisfaction, it is the most economical oil for anyone to use.

From 10,000 to 20,000 miles without engine trouble is common among users. The big real reason why you should use this oil is—sure, constant and better car service—for a greater period—at the least possible cost.

There is always something better, that is why

EAGLEINE OIL

has won on quality

An extremely interesting booklet of facts at request

Eagle Oil and Supply Company

44-46 INDIA STREET, BOSTON, MASS.

New York
Woolworth Building

Chicago
1132 West 37th Street

**REO**

Eventually They'll All Follow Reo Leadership

IN CALIFORNIA where there are more motor vehicles per capita than in any other state—

IT IS ILLEGAL to drive a motor truck unless equipped with electric starter and lights and a windshield.

THOSE FEATURES that were first incorporated in a motor truck by Reo and which were flouted and ridiculed by others as superfluous, are now given recognition legally as well as morally and commercially.

JUST CONSIDER how the chances of accidents and consequent damage suits are lessened by electric lights on a motor truck.

EQUALLY PROTECTIVE to the driver is the electric starter—broken hands and wrists never threaten a driver of a Reo "Speed Wagon."

AND THE CLEAR-VISION, rain-vision windshield—also first applied to a motor truck by Reo—is also invaluable in protecting pedestrians and the driver and the owner against accidents in stormy weather.

WE HAVE OFTEN called your attention to the time-saving value of these distinctly Reo features.

BUT NOW the State of California has recognized their tremendous importance in its "Safety First" legislation by forcing less progressive makers to adopt these three Reo features.

OUR ONLY PROBLEM at this time is to get enough "Speed Wagons" to supply all who insist on having Reos.

NOTWITHSTANDING Reo is today the largest manufacturer of motor trucks in the world, still the supply is inadequate to meet the demand.

Reo Motor Car Company
Lansing, Michigan

"The Gold Standard of Values"

(When Writing to Advertisers, Please Mention the Automobile Journal.)

*Do your springs squeak?
Does your car ride badly?
Does your car show undue wear?
What about upkeep and repair bills?*

A squeaking spring is a constant menace. It is proof that they are dry and rusty. That soon the leaves will become frozen and then must break.

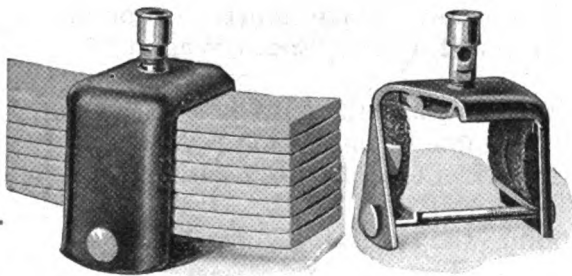
Safety, car service and comfort depends on the condition of the springs on any vehicle; yet no part of the car is given so little attention.

Springs must be lubricated if they are to absorb all road shocks and stresses. Otherwise they break and oftentimes with fatal results. Cars with dry and rusty springs deteriorate quickly and all the mechanism soon shows the effects of the sledge hammer blows that the springs, if properly lubricated, would absorb.

Springs a Potent Factor In Car Operation

BROWN SPRING OILERS

Will stop all spring squeaks. They will lubricate all bearing surfaces and the springs will not break. The car will ride easily and all undue wear on tires, chassis and body will be eliminated.



The illustration shows how the Brown Spring Oilers are made. How easy to attach. How and why it is so positive in action. It is made to slip over the spring and once placed it is bolted in position, filled with oil and requires no further attention aside from refilling the oil well. There is a size for every spring. It will last for years. It is a car necessity and an ever earning investment. It saves and always serves. The cost is moderate. It is car insurance of the highest quality.

Spring manufacturers recommend them. All jobbers and dealers sell them. They are sold with an iron-clad guarantee of complete satisfaction in any service.

At request we will send a copy of the most interesting books on springs and care of the car ever written. It tells as well how to add to tire mileage and how to cut upkeep and repair costs to the minimum.

Complete information at request. Write for it today.

Brown Spring Oiler Company
6913 CARNEGIE AVENUE, CLEVELAND, OHIO

COES *The Standard* WRENCH



WRENCHES that are made for the hardest service. They do not break but grip and hold and their efficiency never lessens.

Economy tools as they last longer, give better service and never become useless through wear.

Utility wrenches of the highest order for car owners and repairers as they can be used in compact places and once set hold like a vise.

*The Best Wrench
The Cheapest*

All dealers carry in stock the exact size to meet your need. They recommend Coes Wrenches as all good dealers have for more than fifty years.

COES WRENCH COMPANY
WORCESTER, MASS.



NATIONAL *Zig Zag* RADIATOR FOR FORDS

National ZIG ZAG Radiators are more than just so much metal.

They are correctly designed, scientifically constructed, technically tested; radiators that have greater cooling capacity—unusual expansion and contraction flexibility. That means "plus" service.

They guarantee better radiation—added efficiency, besides adding wonderfully to the attractive appearance of a car.

Increased Driving Power Supplied—Less Gasoline and Oil Consumed—are assured results.

\$28.00

F. O. B. Detroit. Finished in either nickel or black enamel. Shipping weight complete, 35 pounds.



Dealers

We are now in position to offer you an attractive agency proposition. Full information upon request.

Ask Your Dealer or Write Us Direct.

NATIONAL CAN COMPANY
DETROIT (Radiator Division) MICHIGAN

(When Writing to Advertisers, Please Mention the Automobile Journal.)

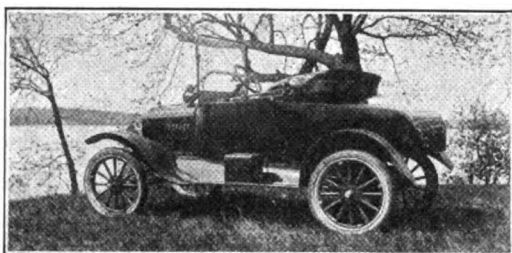
THE CRUISER

Send for Illustrated Circular



OUR PATENTED CRUISER OUTFIT FOR FORD ROADSTER

Equipment includes tent, gasoline stove, spring, mattress, chair, camp stools, wash stand, table, bucket, axe and aluminum cooking utensils.



As it appears on the road with complete equipment.

CRUISER MOTOR CAR COMPANY
MADISON, WISCONSIN

DIXON'S GRAPHITE Automobile LUBRICANTS

Gears and bearings run more smoothly and last longer when lubricated with Dixon's Lubricants. They put an end to all lubrication troubles.

Also ask your dealer about Dixon's famous Cup Grease.



Made in Jersey City, N. J. by the
JOSEPH DIXON CRUCIBLE COMPANY
Established 1827



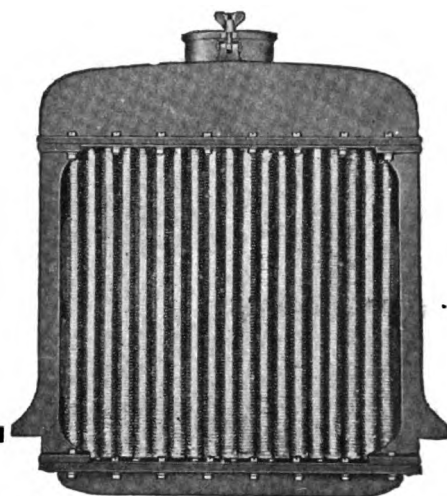
NEW DEPARTURE BALL BEARINGS



Strength
Stamina
Service



The New Departure Manufacturing Co., Bristol, Conn.
Conrad Patent Licensee



Makes Your Ford Truck More Efficient

by saving repair bills, loss of time and loss of service. The Radiator every Ford Truck Owner needs—simple—sturdy—strong. Practically freeze and boil proof. Thousands used by U. S. Government on Type B Liberty Motors. Standard equipment on many trucks of highest grade.

"As Sturdy As a Ford Engine"

"EMCO" FORD TYPE Truck Radiator

makes the Ford Truck 100% efficient.

SCIENTIFIC CONSTRUCTION

This Radiator is of fin and tube type. Each tube can be instantly removed and new one inserted, insuring prompt stoppage of any leak. Frame consists of malleable iron—capable of standing hardest usage.

Immediate shipments can be made—either freight or express.

NOTE: We also furnish the famous English and Mersick genuine honey-comb type core for all makes of cars, ready to install.

Jobbers—Dealers—Repairmen.

The Emco Truck Radiator is a money maker and satisfaction producer for you. Write NOW for liberal discount plan. You cannot afford to disregard our attractive proposition. For full details, address

Motor Truck Radiator & Mfg. Co.

253 West 58th Street, New York.

(When Writing to Advertisers, Please Mention the Automobile Journal.)



They Greatly Outwear Their Guarantee

EVERYTHING honest and lasting that goes into other highest grade tires is used in the Perfection Tire, AND in addition an open-weave asbestos strip woven by us AND an extra ply of the strongest Sea Island Cotton AND our own special Rubber Compound.

The Asbestos protects the Cotton both against wear and against the high degree of heat needed for the thorough cure of the Rubber. This asbestos, soft as silk and tough as a steel spring, forms an inseparable union with the rubber in the curing process, making blisters impossible, making tread separation impossible—doing away with the twin evils which ruin other tires.

Made by master workmen, expert eyes watching each stage of the making, rigidly inspected by automatic devices intelligently controlled and rejecting every imperfection. Everything humanly possible combines to make the Perfection Tire PERFECTION. Every tire is properly balanced, every tire is just resilient enough to afford the greatest comfort in riding for the most wear, and the most wear for the greatest comfort in riding.

A prime luxury at the cost of a staple necessity.

PERFECTION TIRES



Perfectly
Made from
Perfect
Materials

6,000 Miles
Guaranteed
Ford Sizes Guaranteed
7,500 Miles

Perfection Tire & Rubber Co.
FORT MADISON, IOWA

Expert Distributors NEMOURS TRADING CORPORATION
151 Fifth Ave., New York, N. Y.



Save Your Axle Bearings

IN many cases live axle bearings have shown rapid depreciation from neglected lubrication.



lasts several times longer in axles than common greases and cannot leak out of bearings, but gives perfect lubrication to the last.

Use NON-FLUID OIL in cups on steering knuckles and steering tube bearings—it lasts several times longer and helps to make the steering wheel responsive.

Try "KOO special" grade for gears, "KOOO" for all bearings. It comes in orange cans. Most dealers have it.

New York and New Jersey Lubricant Company
165 BROADWAY, NEW YORK

GRANT SIX

\$1120

F. O. B. Cleveland

Success and sales power spring from the conviction of value. It's ten times as easy to sell a car you believe in all the way.

GRANT MOTOR CAR CORPORATION, CLEVELAND

TRACTOR WORLD

Monthly

20c the Copy

\$2 the Year

A Tractor Journal devoted to the tractor industry and trade

Published by

The Automobile Journal Publishing Company
PAWTUCKET, RHODE ISLAND

(When Writing to Advertisers, Please Mention the Automobile Journal.)

The Watch Dog of Your Motor

Every minute you drive your car with the motor overheated bring you closer to the repair man and a big repair bill. When the supply of water in your radiator runs low, overheating is the inevitable result. With this condition comes the burning of bearings, cracking of cylinders, loss of power, backfiring and all the other costly and troublesome consequences. The way to avoid this—the way to prevent the water in the radiator from ever running too low—is to equip your car with

THE MOTALARM

"You Don't Have to Watch It"

This new appliance is unlike any radiator device ever put on the market. It does not merely show you when you are in danger from an overheated engine—it tells you. And it tells you in unmistakable terms by an insistent siren which can be heard in the noise of traffic or a heavy storm. Just as soon as the water runs low and the cooling system fails to func-

tion efficiently, the reliable MOTALARM gives you warning and keeps it up until the condition is remedied. But the warning is given before the danger point is reached—after the signal sound you can still travel without danger for thirty miles to a place where water may be obtained. This is the distinctive feature of the MOTALARM.

Requires No Attention

The beauty of the MOTALARM is the fact that you do not have to depend on your remembering to glance at it from time to time—you can forget it's there. The MOTALARM is your watch-dog. It is on guard every minute of the day; it pays for itself from the moment you first install it. It serves also as a convenient water gauge at all times. The MOTALARM is an attractive dignified radiator ornament which enhances the appearance of even the finest of cars. It is an absolute necessity. It is made to fit the radiator cap of all cars—your car should be installed with it without any delay.

PRICE \$3.00 From most reliable dealers or direct from us.

DEALERS: The MOTALARM is sure to be one of the best sellers ever placed on the motor car accessory market. There is virgin territory ready for live dealers which will be allotted as fast as applications are received and approved.

THE MOTALARM CORPORATION, 1777 Broadway, New York



"Send Us More New York Automobile Replacement Coils at Once"

is the request of every Jobber and Dealer who have ordered previously

Unless you are already handling our REPLACEMENT IGNITION COILS you cannot realize the tremendous existing demand—they are not in the class of ordinary accessories. They must be procured immediately when coil troubles occur.

Fifteen years' coil building experience enables us to produce a coil that gives a crashing big hot spark, even when battery is low, which insures easy starting, perfect running and full power from present day gas.

No article ever supplied the automobile industry has proven more beneficial alike to Dealer, Jobber and user. We make a coil for every car, that is guaranteed for all time.

Circular showing how to order for each model car with prices and other information upon request.



TYPE D



TYPE A

NEW YORK COIL COMPANY

338-340 Pearl Street,

New York, N. Y.

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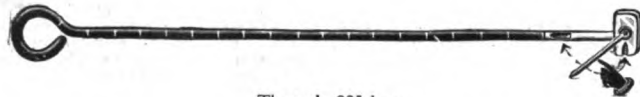
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The tool—22" long

This tool is the one most needed by all owners of Ford Cars, as it will not only accurately measure the Gasoline in your tank, but provides the only sure means of learning whether you have oil in the crank case or not.

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Parlor, bedroom and bath, 1 or 2 persons..	5.00 & 6
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Hotel Lenox

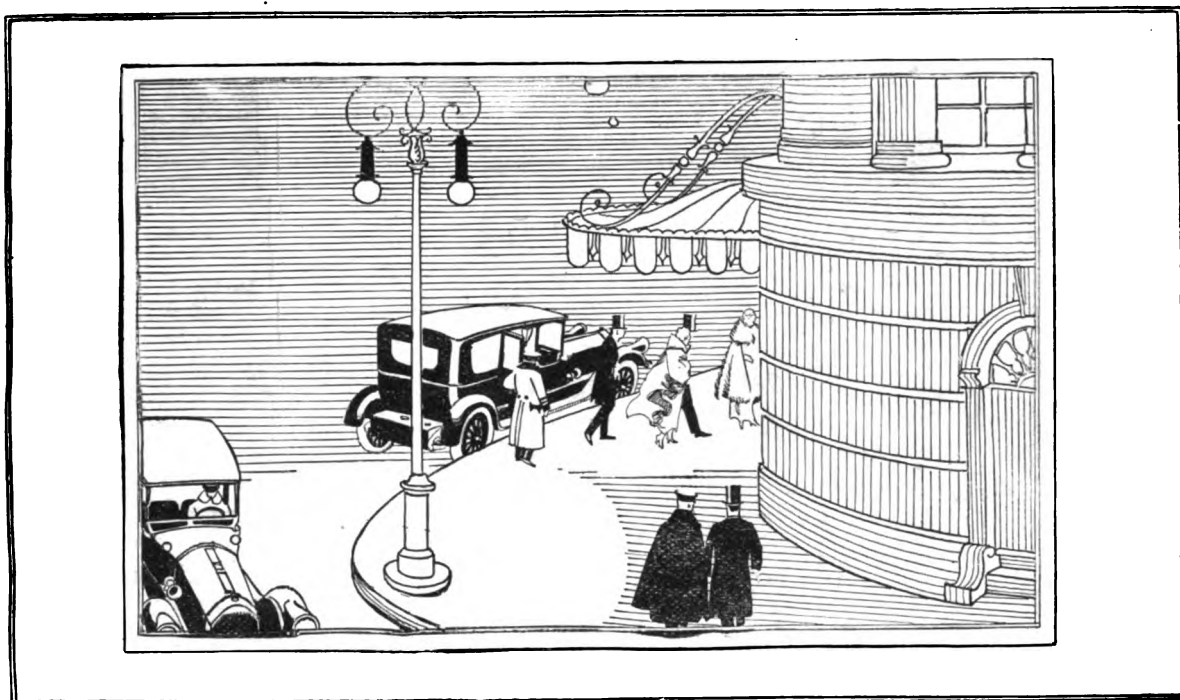
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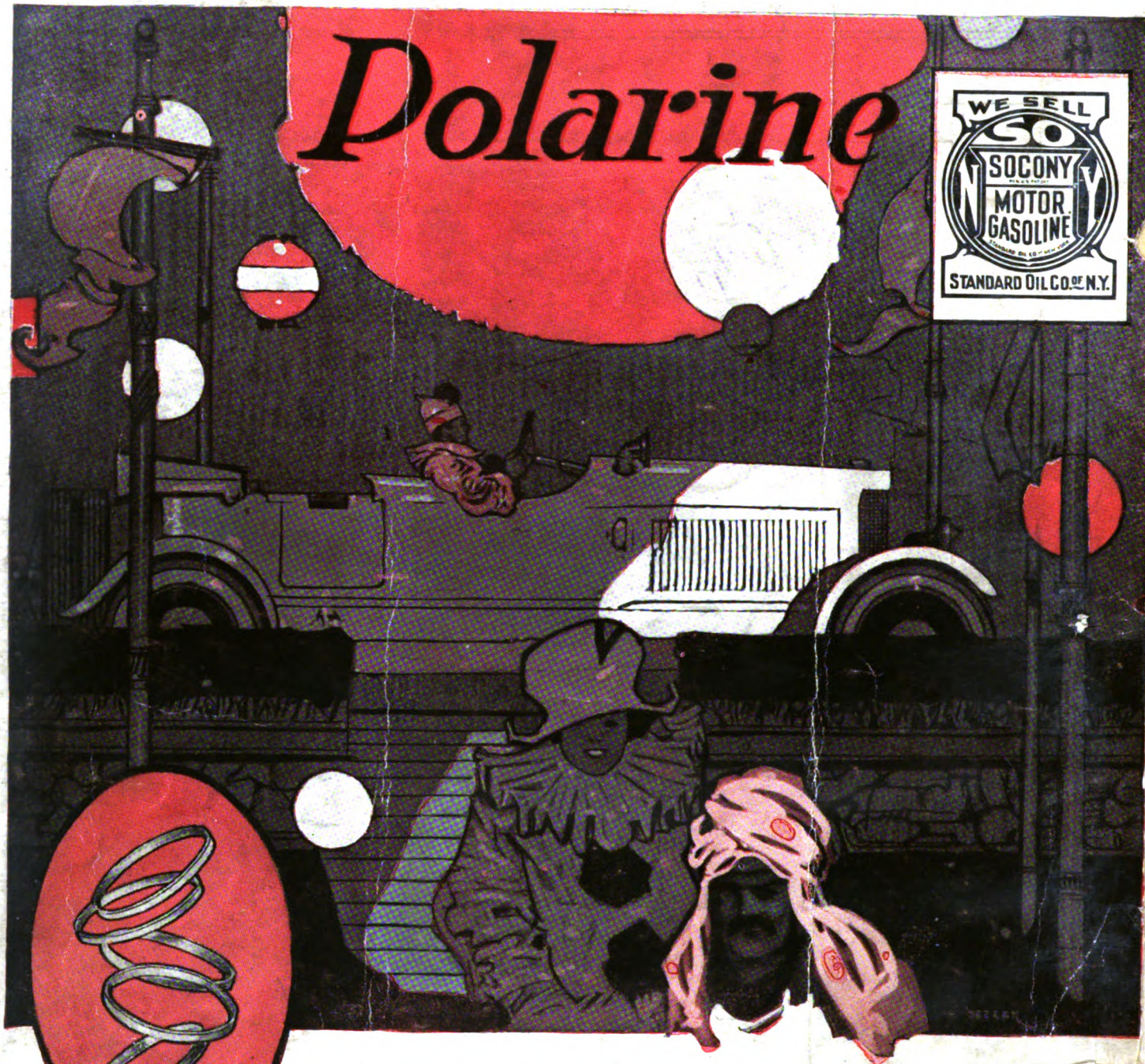


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